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<p><i>CA</i></p> <p>the influence of certain salts on the reaction of esterification. A. V. Lomonov, <i>J. Gen. Chem.</i> (U. S. S. R.) 2, 65 70 (1932). Previous workers (Sutherland, C. I. 6, 3349, 8, 450; 9, 2140-1; Sayashowski, C. A. 6, 964; and Taylor, C. A. 8, 1301) have shown that catalysis of esterification is effected not only by H ions but also by the non-dissociated mols. of heavy acids (HCl and H₂SO₄) and neutral salts. The catalysis of esterification of AcOH with EtOH and MeOH by AgNO₃ and other neutral salts is here investigated (cf. Komarovskii and Gandelman, <i>Zhur. Nauchno-issledovatel'skikh Kafedr V Odesse</i> 8-9 (1924)). Esterification is retarded by AcONa (lowering of the dissociation of AcOH). Little effect is exerted by Ag⁺ and AgCNS (insol. in H₂O), Li₂SO₄, Ba(NO₃)₂, Na₂WO₄, Th(SO₄)₂ (salts of strongly active metals). Acceleration is effected in the order listed by Sr(NO₃)₂, KI, Ag₂SO₄, Na₂SO₄, RbCl, Pb(NO₃)₂, HgCl₂, NaCl, Th(SO₄)₂, NH₄CNS, Ti(SO₄)₂, CoCl₂, Ni(NO₃)₂, AgNO₃, HgNO₃, Ce(NO₃)₃, Hg(NO₃)₂. The influence of AgNO₃ was studied in more detail. Conclusions:—Many neutral salts of alkali, alk.-earth and heavy metals accelerate the esterification of EtOH and MeOH with AcOH in equimol. mixts. at 25° in the absence of strong acids. The salts of Hg, Ag, Co, Ni and Ce are particularly active. This action is produced by the dissolved salt, i. e., the reaction takes place in a homogeneous medium. The catalysis is caused mainly by the non-dissociated mols. of salt, although the ions may exert some effect. With AgNO₃ catalysis increases with concn. of AgNO₃ up to satn. With some salts the final equil. of the reaction of esterification is altered. Satd. AgNO₃ increases the speed of reaction 5-6 times and shifts the equil. from 66.6 to 67.5%. At higher temps. (160°) the reaction with AgNO₃ practically is not accelerated and the equil. is shifted to 64.4%. Low concns. of AgNO₃ do not markedly affect the equil. of the reaction. AgNO₃ in satd. solns. at 25° accelerates the esterification of MeOH with AcOH 8-10 times with a shift of equil. from 71.6 to 73%. The saponif. action of 12-22% of H₂O added to the equimol. mixt. of MeOH and AcOH is counteracted by AgNO₃ in high concn., and the speed of the reaction is about equal to that of the reaction with AgNO₃ in a system free from H₂O. CHAB. BLANC</p>																																																			
<p>ASAC-11A METALLURGICAL LITERATURE CLASSIFICATION</p> <p>SEARCHED INDEXED SERIALIZED FILED</p> <p>SEP 1964</p>																																																			

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17

Vapor-phase cracking of primary tars from coal. A. D. Petrov, A. V. Lazovoi and E. A. Porshiltzeva. *Zh. fiz. Khim.* 41, Petrov, A. V., Lazovoi and E. A. Porshiltzeva. *Zh. fiz. Khim.* 41, 380-405 (1967). —A primary tar fraction from the Cherekhov coals b. 240-370°, having a sp. gr. of 1.0382 and contg. about 50% phenols, was cracked at 525-550°, passing 100 cc. for 10 min. The product had a sp. gr. of 1.0360-1.0369 and contained 15-17% of a fraction b. -240°. The gases, amounting to 400-600 cc., were composed of C₂H₄ 11.8-15, CO 4.0-15 and CH₄ + H₂ 74-85%. The same stock was passed through the cracking zone at 525-800° for 30 min., 60 min. and 6 hrs. If the temp. was kept below 600-650°, very little coke was formed and the yield of the light fraction increased to 26%, and gas to 8 l. with increase in the duration. If the temp. was raised to 700-800°,

the gas yield was increased to 21 l., while the yield of light fractions was lowered. The gas was produced mainly by the decompn. of the phenolic part, very little coke was formed if cracked in the vapor phase. Thus in cracking with 3 recyclings, the yield of light fractions (except the first cracking) was 15.7%, gas 31.4 l. and C 16.3%. The cracking of primary tar from Barzas sapropelites produced results similar to the cracking of the Cherekhov coal tar. However, here the light fraction was almost entirely free of phenols and was characterized by a higher proportion of light fractions. The properties of the products obtained are tabulated. In the hydrogenation of the cracked residue of the Barzas sapropelites which was effected with 4 recyclings, a gasoline yield of 63% was obtained. A. A. B.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS		COMMON VARIABLE MOLE	
OPEN MATERIAL MOLE		CLOSED MATERIAL MOLE	
<p>PROCESSES AND PROPERTIES INDEX</p> <p>1ST AND 2ND ORDERS</p>			
<p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>THE chemical composition, properties and methods of treatment of primary tar from the lignites of Tchéliafinsk. Berginization of tar. A. V. Logoyev and M. K. D'yakova. <i>Compt. rend. acad. sci. U. R. S. S.</i> 3, 620 4 (in French 1934-5) (1934).—Cracking-hydrogenation expts. on 230-370° primary tar showed that catalytic berginization followed by low-temp. hydrogenation converted 70-80% of the tar to motor fuel below 230° with less than 1% methane and 0.25-2% carboids. The residue, contg. 40% pitch, is converted into a fraction boiling below 280° and solar oil, used in subsequent berginization. MoS₂ on brick fragments is a cracking-hydrogenation catalyst particularly suited to this material because it is stable, easily regenerated and very active. Details of hydrogenation are given. W. F. Bruce</p>			
<p>1ST AND 2ND ORDERS</p>			

1ST AND 2ND ORDERS		PROCESSING AND PREPARED INDEX	
<p>ca</p>		<p>21</p>	
<p>Destructive hydrogenation of peat-producer tar. A. V. Logovoi and A. B. Kharlampovich. <i>Khim. Tverdogo Topiva</i> 5, 791-806(1934).—A gas-producer tar obtained from Khvosbchevsk peat, contg. C 75.08, H 9.35, N 2.65, O + S 12.92, ash 0.02, H₂O 2.92, carboids 2.0, carboxylic acids 1.0, phenols 30.0, paraffins and waxes 7.1%, was hydrogenated at an initial pressure of 100 atm. in the presence of MoS₃, MoS₃ + Al₂O₃, Cr₂O₃ + Ni + Cu, and MoO₃ + Al₂O₃ + Ni. Heavy ends were recycled with the addn. of more H after removal of the fraction b. below 280°. A yield of up to 45% of gasoline and kerosene fractions can be obtained by hydrogenating at 420-80°, under 300-60 atm. in the presence of MoO₃ + Al₂O₃ + Ni. The product contains very small amts. of S in addn. to 2-3% phenols, which are easily removed with caustic. The motor-fuel yields were almost identical for all the catalysts, though more vigorous cracking was observed for the catalysts contg. MoS₃. Ni promotes the formation of gases. Removal of phenols and solid paraffins before hydrogenation did not give better results. MoO₃ promotes the hydrogenation of C₁₁-insol. compds. of tar. The most active phenol-reducing catalysts are MoS₃ + Al₂O₃ and MoO₃ + Al₂O₃ + Ni. Gasoline b. 40-230°, after the removal of phenols and bases, had d₄ 0.7874, I no. 18.22 and contained 0.035% S. Data characterizing the properties of compds. obtained are tabulated. A. A. B.</p>			
<p>ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
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<p>22000 17103510V</p>		<p>22000 17103510V</p>	

3 Hydrogenation of Cheliabinsk brown coal. M. K. D'yakova and A. V. Lopyrev. *Compt. rend. acad. sci. U. R. S. S.*, 2, 254-7 (in English 257-8) (1965). Cheliabinsk brown coal was hydrogenated without a catalyst to give 65% tar, the greater part b. 280-350°. With a MoS₂ catalyst 70-75% was converted to liquid fuels, mainly b. 280-410°. The initial H₂ pressure was 100 atm. and the working pressure 250-260 atm. Low temp. (200-400°) conversion to heavy and medium oils can be followed by a 2nd conversion to benzene and kerosene at 450-600°. F. H. Moser

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CH

An investigation of the chemical composition, properties and methods of treatment of primary tars of Chelabinsk brown coal. II. The composition of the light-tar fraction and the stabilization of benzine by hydrogenation. M. K. D'yakova, A. V. Losurov and S. I. Chertkova. *Compt. rend. acad. sci. U. R. S. S.* 2, 399-402 (1935) (in English 408).—The "benzine" fraction (b. up to 200°) of Chelabinsk brown coal contains 37.8% of the primary tars. Of this 40.4% consists of phenols and acids, 10.9% of aromatic hydrocarbons (toluene-xylene fraction, 3.8%), 1.3% of naphthenes, 11.4% of paraffins, 17.2% of unsatd. hydrocarbons, 0.8% of N bases. S and neutral O compds. are not detd. The neutral "benzine" fraction consisting of 40% aromatic compds., 34.8% unsatd. compds., 2.7% naphthenes and 22.7% paraffins cannot be freed from S deriva. by the usual means. This and stabilization are achieved by hydrogenation in the presence of MoS₃ or CoS at 100 atm. and 400° for 2 hrs. This decreases the amt. of unsatd. compds. which go largely to naphthenes with CoS and to naphthenes and paraffins with MoS₃. From 80 to 87% of the crude "benzine" is recovered and H₂ absorbed up to 2-4% of charge. The stabilized "benzine" contains 42-8% aromatic compds., 5-17% unsatd. compds., 10-26% naphthenes and 28-36% paraffin hydrocarbons. It is free from S and stable on storage. R. Baltzy

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND COLUMNS		PROCESSING AND PROPERTIES INDEX	
<p>Investigating the chemical composition, properties and methods of treating primary tars from Chelyabinsk brown coals. I. Destructive hydrogenation of the primary tar from Chelyabinsk brown coals. A. V. Loxovoi and M. K. D'yakova. <i>J. Applied Chem.</i> (U.S.S.R.) 38, 494-499 (in French 500) (1965).-- See C. A. 29, 10647.</p> <p>II. The chemical composition of the light fractions from the primary tar from Chelyabinsk brown coals and the stabilization of the hydrocarbon part of the "benzene." M. K. D'yakova, A. V. Loxovoi and S. I. Chertkova. <i>J. Applied Chem.</i> (U.S.S.R.) 38, 695-705 (in French 706) (1965).-- See C. A. 29, 70467.</p>		<p>21</p>	
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>1ST AND 2ND COLUMNS</p>		<p>3RD AND 4TH COLUMNS</p>	

1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
<p><i>BC</i></p> <p style="text-align: right;"><i>B-I-2</i></p> <p>Composition, properties, and methods of treatment of primary coal of Chalkashik Brown coal. H. M. K. KUMARVA, A. S. KUMAR, and H. I. TACHAT-NOVA (J. Appl. Chem. USSR, 1955, 5, 695-706; cf. B. 1935, 789). The liquid fraction of b.p. < 230° contains > 1% of S, not eliminable by the ordinary methods. A stable, 8-sec. product is obtained in 88% yield by catalytic hydrogenation (400°/100 atm.; 2 hr.), whereby the content of aromatic hydrocarbons is unaffected, whilst unsaturated are converted into naphthenic hydrocarbons in presence of CuS, and chiefly into paraffins hydrocarbons by H₂. B. T.</p>																			
<p>COMMON ELEMENTS</p> <p>COMMON VARIABLES</p> <p>EXTERNAL MODEL</p> <p>INTERNAL MODEL</p>																			
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111 AND 120 ORDERS										PROCESSES AND PROPERTIES INDEX										121 AND 122 INDEXES									
<p>CO</p> <p>Catalytic high-pressure hydrogenation of benzene homologs. M. K. D'yakova, A. A. Lomovoy and T. G. Stepanova. <i>J. Gen. Chem. (U. S. S. R.)</i> 7, 722-8 (1937).—Hexamethylbenzene (I), pentamethylbenzene (II), 1,2,4,5-tetramethylbenzene (durene) (III), PhPr and <i>o</i>-, <i>m</i>- and <i>p</i>-xylenes when hydrogenated in the presence of NiO catalyst at 200-40° and 120-230 H atm. for 10-20 hrs. formed the corresponding 6-membered naphthenes without a cleavage of Me (Pr) groups. I, II and III resulted from xylenes with MeCl and AlCl₃. I, m. 150-60°, was completely hydrogenated after 20 hrs. autoclaving, affording 60% hexamethylcyclohexane (IV), b. 210-18°. It consisted of 2 fractions: b. 210-14°, n_D²⁰ 1.4000, d₄²⁰ 0.8405, M. R. 54.94, mol. wt. 170, PhNH, point 50.0° and b. 214-10°, n_D²⁰ 1.0098, d₄²⁰ 0.8450, M. R. 54.8, PhNH, point 50.2°. The product was, probably, a mixt. of <i>cis</i>- and <i>trans</i>-IV. It differed in its constn. from IV obtained by Dross, <i>et al.</i> (C. A. 28, 1179) and from the C₁₁H₁₆ hydrocarbons isolated by Mabery from various petroleum products. In addition, to IV, about 30% of a lower-boiling fraction (190-210°) was formed, the nature of which is being investigated. It was hydrogenated for the 1st time. It gave 1,2,3,4,5-pentamethylcyclohexane (V) as a new compd., b. 181.7°. This was sepd. into 2 fractions: b. 181.0°, n_D²⁰ 1.4100, d₄²⁰ 0.82, M. R. 50.35, PhNH, point 57.76°, and b. 186.7°, n_D²⁰ 1.4505, d₄²⁰ 0.8214. V constn. differ from those of petroleum pentamethylcyclohexane (b. 180°, d₄²⁰ 0.8119) and the product obtained by Stratford (<i>Ann. combustibles liquides</i>, 4, 81, 317 (1929)). III, m. 79°, n_D²⁰ 1.0831, gave more than 65% tetramethylcyclohexane, b. 160-1.5°, n_D²⁰ 1.4371, d₄²⁰ 0.7931, PhNH, point 58.8°, mol. wt. 130, M. R. 46.24 (calcd. 46.18). It is identical with the product prepd. by Auwers (<i>Ann.</i> 420, 1060). The following naphthenes resulted in nearly theoretical yield (90%). 1,2-Dimethylcyclohexane, b. 122.5-4°, n_D²⁰ 1.4283, d₄²⁰ 0.7814, PhNH, point 44.9°. 1,3-Deriv., b. 119.5-20.5°, n_D²⁰ 1.424, d₄²⁰ 0.7677, PhNH, point 49.5°. 1,4-Deriv., b. 119.5-20°, n_D²⁰ 1.4232, d₄²⁰ 0.7669. Propylcyclohexane, b. 154.5°, n_D²⁰ 1.4300, d₄²⁰ 0.7931, PhNH, point 50.5°.</p> <p>Chas. Blanc</p>																													
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																													

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<p>6058. SOME PHYSICAL CONSTANTS OF HYDROCARBON MIXTURES. Lozovoi, AV Dyakova, KK and Stepateeva, TG (J. gen. chem. U.S.S.R. 1937, 7, 1119-1132; U.S.P. Surv. for. petrol. lit. transl. s-386, 1945, U.S. bur. min. abstr.) The changes in refractory indexes n_D^{20}, sp. gr. d_{40}^{20} and aniline points of binary mixts. consisting of mononuclear aromatics and the corresponding naphthalenes were detd., depending upon the compn. of the mixt. The data obtained may serve for quantitative anal. of mixts. of this type with sufficient precision. Data for 12 different binary mixts. are tabulated.</p>																									

PL

Velocity of hydrogenation of aromatic hydrocarbons. I. A. V. LAZOVSKI and M. K. DJAKOVA (J. Gen. Chem. Russ., 1937, 7, 2064—2077).—The reactions of hydrogenation of PhMe, o-, m-, and p-xylene, durene, α -C₆H₄Me₂, C₆HMe₃, PhEt, PhPrⁿ, and p-C₆H₄MePrⁿ (Ni-Al₂O₃ catalyst) proceed at const. velocity at 75—230°. At <110° the velocity of hydrogenation of PhMe is independent of the pressure, whilst at 190—200° it is \propto pressure, over the range 20—140 atm. R. T.

ASD SLA LITERATURE CLASSIFICATION

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BC

Velocity of hydrogenation of aromatic hydrocarbons. II. Velocity of reaction and structure of hydrocarbons. M. K. DJAKOVA^a and A. V. LEONOV^b (*J. Gen. Chem. Russ.*, 1938, 9, 106-115).—The velocity v of hydrogenation of C_nH_m homologues at a Ni-Al₂O₃ catalyst (15–230°/35–300 atm.) is expressed by $v = v_0/T^n$, where n is the velocity for C_nH_m . For xylenes, v falls in the order p. > o. > m-xylene. The same val. of v is obtained for PhMe, PhEt, and PhPr^c, but v for PhPr^d is > for PhPr^e.

R. T.

1ST AND 2ND GROUPS																																																																																																							
PROCESSING AND PROPERTIES INDEX																																																																																																							
<p><i>Ce</i></p> <p>Solution of coals. M. K. D'yakova, A. V. Lopyrev, T. G. Stepanova and S. A. Senyavin. <i>Compt. rend. Acad. Sci. U. R. S. S.</i> 20, 681 (1948) (in English). Coals ground to 100 mesh were heated 1 to 4 hrs. in a 500-cc. retorting autoclave at 275-410° with several successive portions of the solvent. The amt. dissolved was calcd. from the increase in ash content of the residue. Soln. rate slow below 325°; carbonization occurs above 410°. Each kind of coal has its own optimum extr. temp.; dried coal dissolves more readily than moist. The solns. are suitable raw materials for hydrogenation. The following gives coal, solvent, no. of portions of solvent used and percentage of coal dissolved, resp.: East Siberian humic-sapropelite (I), anthracene oil (II), 3, 60.1; I, II, 3, 62.0 (under 10 atm. initial H₂ pressure); old humic brown coal, II, 5, 57.6; young brown coal (III), II, 2, 75.4; III, primary tar from I (IV), 1, 69.8; sapropelite (V), II, 2, 80.1; V, shale-oil distillate (VI), 2, 80.5; V, IV, 1, 79.7; oil shale, VI, 4, 80.1. G. R. Y.</p> <p>Separation process in the Rheclavre (coal washes). R. Schöbol. <i>Glückauf</i> 73, 968-77, 993 (1937). The various stages of sepn. are examd. The application of the data obtained to com. practice is discussed.</p> <p>H. C. P. A.</p>																																																																																																							
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<table border="1"> <thead> <tr> <th colspan="13">1ST AND 2ND GROUPS</th> <th colspan="13">3RD AND 4TH GROUPS</th> </tr> <tr> <th colspan="13">SUBJECTS</th> <th colspan="13">SUBJECTS</th> </tr> </thead> <tbody> <tr> <td colspan="13">A B C D E F G H I J K L M N O P Q R S T U V W X Y Z</td> <td colspan="13">A B C D E F G H I J K L M N O P Q R S T U V W X Y Z</td> </tr> </tbody> </table>																										1ST AND 2ND GROUPS													3RD AND 4TH GROUPS													SUBJECTS													SUBJECTS													A B C D E F G H I J K L M N O P Q R S T U V W X Y Z													A B C D E F G H I J K L M N O P Q R S T U V W X Y Z												
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10

CO

Thermal polymerization of acetylene in the presence of zinc chloride. A. V. LOZOVOL. *J. Gen. Chem.* (U. S. S. R.) 1, 717-28 (1931). Expts. are described on the polymerization of C_2H_2 with various catalysts as well as the detn. of the gaseous and fluid polymerization products obtained in passing C_2H_2 at 370-450° over anhyd. $ZnCl_2$ with pumice stone as a carrier. In the conclusion a discussion is given of the mechanism of the transformation of C_2H_2 into compds. isolated by L. E. GURWITSCH

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p><i>BC</i></p> <p>Physical constants of hydrocarbon mixtures. II. A. V. LOMOV, M. K. DJAKOVA, and T. G. STEPANENKO (J. Gen. Chem. Russ., 1939, 9, 540—546).—NH₃Ph points, n_D^{20}, and d_4^{20} are recorded for the binary systems alkylbenzene-alkylcyclohexane (alkyl = Buⁿ, n- and iso-amyl, n-octyl), o- or p-CH₃MePh-1-methyl-3- or -4-n-propylcyclohexane, hydriodene-octahydriodene, and tetrahydronaphthalene-decahydronaphthalene. n-Butylcyclohexane, b.p. 117—119°/11 mm., is described. R. T.</p>																			
<p>ASAC-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>SECTION 1: 1-10</p>										<p>SECTION 2: 11-20</p>									
<p>SECTION 3: 21-30</p>										<p>SECTION 4: 31-40</p>									

10

Hydrogenation velocities of aromatic hydrocarbons
 III. Reaction velocity and structure of hydrocarbons.
 A. V. Losovoi and M. K. Dyakova. *J. Gen. Chem.*
 (U. S. S. R.) 9, 895-904 (1935); cf. C. 1, 32, 5286.
 Hydrogenation velocities were det'd. with Ni +
 Al₂O₃ as a catalyst, of a no. of aromatic hydrocarbons to
 establish the influence of the structure on hydrogenation
 velocity. A comparison of the hydrogenation velocities of
 benzene homologs, such as toluene up to octylbenzene,
 showed that the lengthening of the aliphatic side chain
 from 1 to 8 C atoms had little influence on the velocity
 with which H was absorbed by the aromatic ring. The
 hydrogenation velocities of AmPh, iso-AmPh, *p*-PrC₆H₄Me
 and *p*-cymene revealed that branching of the side chain
 did not influence the hydrogenation velocity. *p*-Tolene,
 tetralin and *o*-PrC₆H₄Me absorb H with the same velocity.
 From the present and previous expts. it is concluded that
 neither the length nor the structure of aliphatic side chains
 exerts any practical influence on H absorption by the
 benzene nucleus in the presence of a Ni catalyst. The
 hydrogenation velocity is, however, influenced by the
 no. of substituents present in the benzene nucleus, e. g.,
 the absorption of H becomes more difficult with an increasing
 no. of substituents. Gertrude Berend

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	V	X	Z	AA	BB	CC	DD	EE	FF	GG	HH	NN	MM	PP	QQ	RR	SS	TT	VV	XX	YY	ZZ								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

PROCESSING AND REFINEMENT DATA

CA

21

Thermal solution of coal and hydrogenation of coal solutions. I. Barzass sapromyxit. M. K. D'yakova, A. V. Loxovoi and V. P. Kardasevich. *J. Applied Chem.* (U.S.S.R.) 12, 545-53(in French), 654(1939); cf. C. A. 33, 35614.—The soly. of sapromyxite in anthracene oil, primary tar and hydrogenated shale tar was investigated. The optimal conditions for dissolving sapromyxite are: ratio of coal to solvent 30:70, temp. 300–25° and pressure not higher than 20–30 atm.; 94–5% of coal (on the org. mass) is dissolved. The most effective solvent is anthracene oil. The solids were evapd. under 6 mm. at 200° to 160° oil. The solidified in the presence of 10% MoS₃ at concn. and hydrogenated in the presence of 10% MoS₃. There were obtained oil 90.0, water 1.5, org. residue insol. m CaH₂ 2.4 (before hydrogenation 22%), gas 4.8 and losses 5.0%. The gas contained CO 1.8, H₂ 88.2 and C₂H₆ . . . 10.3%. Therefore, about 80% of coal can be transformed

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

		GROUP		SUBJECT INDEX ONLY LINE		REVISION NO.		PUBLICATION DATE	
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

LOZOVY, A. V.; D'YAKOVA, M. K.

"The Speeds of Hydrogenation of Aromatic and Unsaturated Hydrocarbons," Part IV, Zhur. Obshch. Khim., 10, No. 1, 1940. Institute of Mineral Fuels, Academy of Sciences USSR
Received 17, July 1939.

Report U-1526, 24 Oct 51.

The rate of hydrogenation of aromatic hydrocarbons. V. Polynuclear aromatic hydrocarbons. A. A. Lashov, *J. Gen. Chem.* (U. S. R. S.) 10, 1813-54 (1940); cf. C. A. 34, 4728¹. The reactions studied are divided into 3 groups. In group 1 fall the transformations of tetralin to decalin, tetrahydro- to decahydronaphthalene, 2,6-dimethyltetralin to 2,6-dimethyldecalin, and sym-octa-hydro- to perhydronaphthalene. These reactions represent hydrogenation of the C₆H₄ ring and occur at rates equal to those of substituted C₆H₅ deriva. In group 2 are found hydrogenation of naphthalene to tetralin, acenaphthene to tetrahydroacenaphthene, 2,6-dimethyl-naphthalene to 2,6-dimethyltetralin, anthracene to 9,10-

dihydroanthracene and this to tetrahydro- and then octahydroanthracene, and phenanthrene through the same steps to octahydrophenanthrene. These hydrogenations occur about 10 times faster than those in group 1 and at nearly the same rate for all reactions in the group. In group 3 are found the hydrogenations of Ph, PhCH₃, PhCH₂CH and fluorene. In these non-complexed rings, substitution of Ph does not have a specific effect, so that H₂ hydrogenates at the same rate as C₆H₅ and Ph₂CH at the rate of MePh. PhCH₂ and fluorene hydrogenate more slowly than would be expected by this rule. All the reactions proceed at const. or nearly const. rates, usually until the initial compd. is used up, though in some cases the rate begins to fall off after the reaction is 50-80% complete.

H. M. Liester

11. M. Lebeston

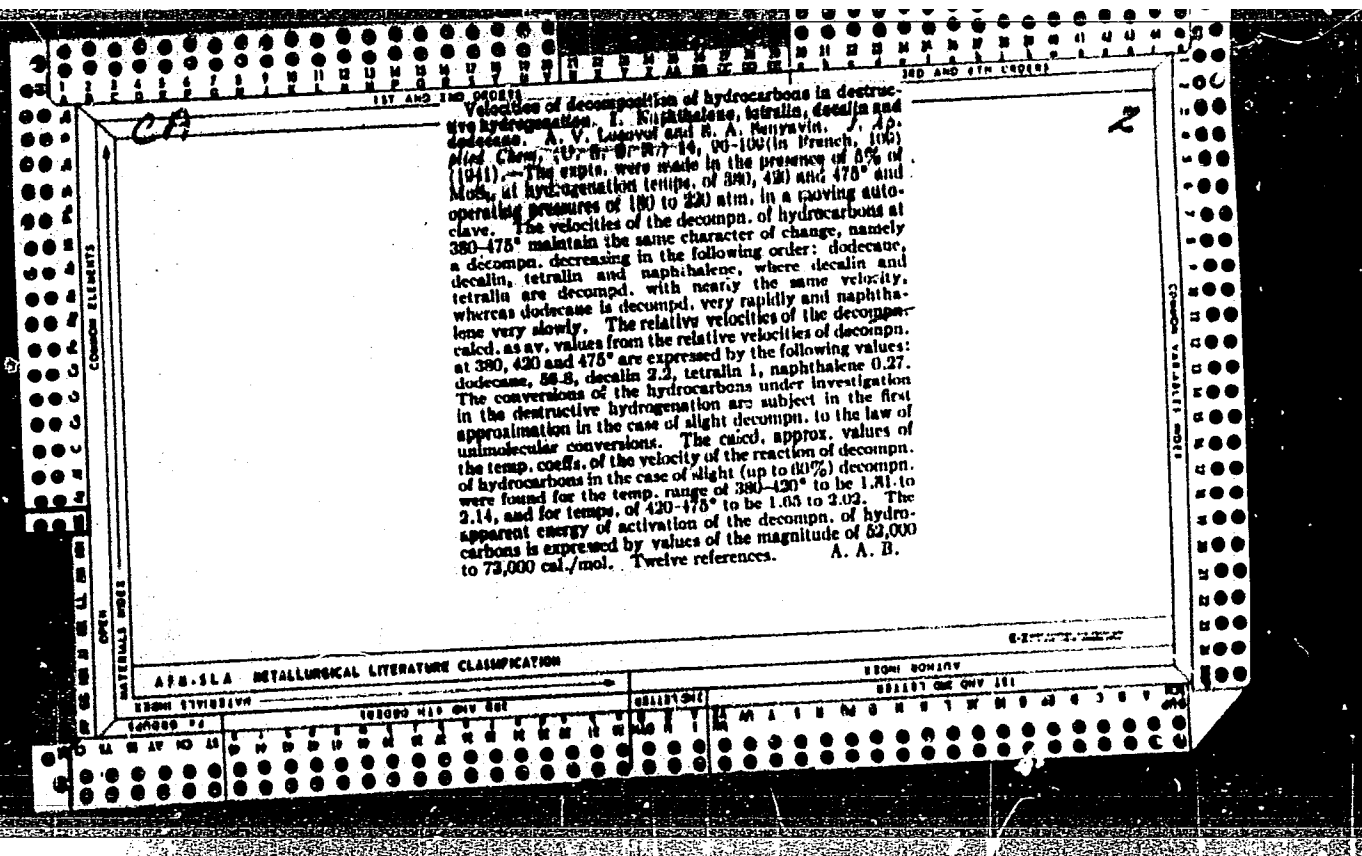
AD-5LA METALLURGICAL LITERATURE CLASSIFICATION

1. LOZOVY, A. V.

2. USSR (600)

p. 1855
"The Influence of Certain Substitutes on the Speed of Hydrogenation of the Benzene Ring" Zhur Obshch. Khim., 10, No. 21, 1940. Institute of Mineral Fuels, Academy of Sciences USSR. Received 19 May 1940.

9. Report U-1612, 2 Jan. 1952.



1ST AND 2ND COLUMNS		3RD AND 4TH COLUMNS	
<p>CA</p> <p>PROPERTIES AND FACTORIES INDEX</p> <p>Rates of hydrogen decomposition on destructive hydrogenation. B. A. V. Lomov and R. A. Barygin. <i>J. Applied Chem. (U.S.S.R.)</i> 18, 25-28 (1945); <i>cf. C.A.B. 20, 968</i>.—On hydrogenation over MoO₃ at 300-475°, the following rates of decomposition compared to that of tetralin were found: anthracene 2.18, 9,10-dihydroanthracene 2.52, acetylenanthracene 4.08, peryleneanthracene 80.42, phenanthrene 3.11, and 1,2-benzanthracene 11.18. III. <i>Ibid.</i> 48-50.—Aliphatic hydrocarbons are much more rapidly decomposed by destructive hydrogenation than are cyclic compounds. The decomposition rate decreases in the order: normal paraffins, polycyclic naphthenes, partly hydrogenated condensed aromatic compounds, condensed aromatic compounds; compounds containing the most H per C are most easily decomposed. Apparent activation energies for 300-450° interval are 66,000-68,000 cal./mol. and at 450-475° interval they are 68,000-69,000 cal./mol. A parallel is drawn between ordinary thermal cracking and destructive hydrogenation. G. M. Kozlovskii</p>		<p>2</p>	
<p>ASR-11A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>FROM DIVISION</p>		<p>FROM DIVISION</p>	
<p>RECORD NO.</p>		<p>RECORD NO.</p>	

LIST AND 2ND ORDER																										PROCESSES AND PROPERTIES INDEX																									
COMMON ELEMENTS																										OPEN MATERIALS INDEX																									
5793. F																										R.																									
<p>VELOCITIES OF DECOMPOSITION OF HYDROCARBONS IN DESTRUCTIVE HYDROGENATION. Losovoi, AV and Senyavin, SA (j. appl. chem. u.s.s.r. 1945, 18, 43-9; u.o.p. surv. for. petrol. lit. trans. 5478; u.s. bur. mines. abstr.) The previously reported experimental data of these authors pertaining to destructive hydrogenation in the presence of molybdenum sulphide, are correlated with literature data on thermal cracking and conclusions drawn pertaining to the effect of various factors in destructive hydrogenation of hydrocarbons. It is concluded that liquid phase destructive hydrogenation in the presence of suspended molybdenum sulphide is for the most part a non-catalytic process. With rise of the temperature from 380 to 475 the activity of molybdenum sulphide as a cracking catalyst apparently increases and a slight drop in the energy of activation occurs. The parallelism of thermal cracking to decomposition occurring in hydrogenation is pointed out. The established similarity of thermal cracking and liquid phase destructive hydrogenation refers, not of the entire process, but primarily to the decomposition of the molecule. The relative</p>																																																			
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velocities of decomposition of molecules with about equal numbers of carbon atoms, decrease in the following order; normal paraffins, polynuclear naphthenes, partly hydrogenated fused ring aromatics, fused ring aromatics, i.e. hydrocarbons with close numbers of carbon atoms undergo destructive hydrogenation the more rapidly the higher the proportion of hydrogen they contain. Among aromatics the following series is formed in the order of increasing decomposition velocities: naphthalene, anthracene (phenanthrene), benzanthracene. Each additional ring in the molecule accelerates the reaction 5-10 times. In the naphthalene series the corresponding increase is 16 times. The above regularities are valid for the temperature range 380-475°. Within 380-420°, the temperature coefficient of the velocity of the destructive hydrogenation is within 1.85 to 2.05, the apparent energy of activation from 55,000 to 65,000 cal./mol within 420 to 475° these values are 1.6-1.75 and 48,000-58,000 cal/mole respectively.

D'YAKOVA, M. K., ICZOVY, A. V.

p. 26

"Hydrogenation of Certain Homologues of Benzene Under Pressure of Hydrogen II," Zhur. Obshch. Khim., 9, No. 1, 1939. Institute of Combustible Minerals, Academy of Sciences USSR, Laboratory of Hydrogenation, Received 5 May 1938.

Report U-1517, 22 Oct. 1951.

Lozovoy, A.V.

Rates of Hydrogenation of Aromatic and Unsaturated Hydrocarbons. VI. Hydrogenation in the presence of

molybdenum disulfide. A. V. Lozovoy and S. A. Senyavin. *Sbornik Stroit. Obshchest. Khim., Akad. Nauk S.S.S.R.* 1, 254-65(1953); cf. *C.A.* 35, 4370. —Relative rates of hydrogenation of monocyclic aromatic hydrocarbons (C_6H_6 , MePh, EtPh, *m*-xylene, mesitylene, $Me_3C_6H_3$) as well as C_6H_8 , cyclohexene, 1-methylcyclohexene, and 1-methyl-3-cyclohexene were detd. in the presence of MoS_2 at 380° and 420° at high H pressure. The rate of hydrogenation is almost unaffected by introduction of 1-6 Me groups and the previously established rule (*loc. cit.*) for Ni does not apply in this instance. Neither is there a noticeable effect produced by increasing the size of the sidechain from Me to Et. Tetrahydronaphthalene is hydrogenated about 3 times as rapidly; $C_{10}H_8$ about 14 times as rapidly, and 1-methyl-3-cyclohexene about 180 times as rapidly as C_6H_6 . Introduction of Me at the point of unsat. retards hydrogenation; e.g. 1-methylcyclohexene is hydrogenated at a rate which is 40% of that of hydrogenation of cyclohexene. The rate of hydrogenation of ethylenic compounds is greater than that of aromatics of polycyclic type, which in turn are more reactive than those of true benzenoid compds. At low degrees of conversion the hydrogenation of C_6H_6 approaches a zero-order reaction in respect to hydrocarbon and nearly 1st-order in respect to H. The temp. coeffs. in hydrogenation of C_6H_6 and MePh in the interval 410-30° are 1.32 and 1.29, with activation energies of 19,000 and 24,600 cal./mole. At high pressure of H, MoS_2 catalyzes hydrogenation of C_6H_6 even at 240-50°. G. M. Kosolapoff

LOZOVY, A. V. and SENYAVIN, J. A.

On the Rate of Hydrogenation of Aromatic Hydrocarbons. VII. Hydrogenation of Benzene and its Homologues in the Presence of Tungsten Disulfide, page 1035, Sbornik statey po obshchey Khimii (Collection of Papers on General Chemistry), Vol II, Moscow-Leningrad, 1953, pages 1680-1686.

Inst of Mineral Fuels, Acad Sci USSR

Lozovoy, A.V.

USSR

✓ The relationship between the structure of hydrocarbons and phenols, and the rate of their hydrogenation, cracking, and reduction under hydrogen pressure. A. V. Lozovoy, *Trudy vuzovskoy khimicheskoy shkoly*, Nauk S.S.S.R., 3, 124-30 (1954). The principal reactions involved in the destructive hydrogenation of fuel oil were investigated, i.e., hydrogenation of unsatd. hydrocarbons with rupture of C-C bonds, the splitting of mols. accompanied by hydrogenation of the fragments, and the reduction of the O, N, and S compds. Hydrocarbon reduction was studied in the liquid phase at 40-230° and 35-70 atm. pressure and with a special high-pressure autoclave. The hydrocarbons to be studied were first carefully freed from traces of catalyst poisons by treatment with 90% H₂SO₄ and Na. An Al-Ni catalyst was used under "catalytically aseptic" conditions, as described previously, and the catalyst retained its original activity throughout the tests. W. M. Sternberg

LOZOVY, A. V.

Rates of hydrogenation of aromatic hydrocarbons. VIII.
Hydrogenation of condensed aromatic hydrocarbons in the
presence of tungsten quinoline. A. V. Lozovoy and S. A. G.
Davydov. J. Gen. Chem. U.S.S.R. 24, 1771 (1964) (Engl.
translation). See C.A.B. 49, 12410.

(1)

MA JW

Lozovoy, A.V.

USSR/Chemistry - Hydrogenation processes

Card 1/1 Pub. 151 - 18/37

Authors : Lozovoy, A. V., and Senyavin, S. A.

Title : Rate of hydrogenation of aromatic hydrocarbons. Part 8.- Hydrogenation of condensed aromatic hydrocarbons in the presence of tungsten disulfide

Periodical : Zhur. ob. khim. 24/10, 1803-1809, Oct 1954

Abstract : The relative rates of hydrogenation of condensed aromatic hydrocarbons - naphthalene, anthracene, chrysene and their hydro-derivatives, was investigated in the presence of a WS_2 catalyst at 400° temperature and a pressure of 150 atm. The kinetics of hydrogenation of condensed aromatic hydrocarbons is analyzed. The results obtained are shown in tables. The effect of molecule complication on the rate of hydrogenation of condensed arom. hydrocarbons, in comparison to the rate of naphthalene and chrysene hydrogenation, is explained. Eight references: 6-USSR; 1-USA and 1-Italian (1928-1953). Tables

Institution : Academy of Sciences USSR, Institute of Minerals

Submitted : May 13, 1954

Lozovoy, A.V.

2057. RATES OF CONVERSION OF SOLID FUELS AND PETROLEUM RESIDUES IN DESTRUCTIVE HYDROGENATION. Lozovoy, A.V. (Trud. Inst. gor. Iskop. (Trans. Inst. Geol. Min. Acad. Sci. U.S.S.R.), 1955, vol. 5, 115-126; abstr. in Int. J. Chem. (Nat. J. Chem., Moscow), 1956, (3), 7669). From a large quantity of experimental data on the rates of hydrogenation and decomposition of hydrocarbons and reduction of phenols, taking account of the chemical structure of the organic compounds of which the fuel is composed and their aggregate composition, laws of a qualitative character are derived for the variation in the rates of destructive hydrogenation of the different types of fossil fuels. The following is suggested as the order of decreasing rate of conversion: organic substance in oil shales, petroleum, primary tars, coke tars, resins. For petroleum: paraffins, naphthenes, aromatics. For products from oil and petroleum: residual oil, residual oil from cracking, residues from petroleum pyrolysis and gas oil, gas oil from cracking, distillates from pyrolysis of petroleum. For solid fuels: sapropel, sapropel-humic, humic-sapropel, and humic. For humic fuels according to rank: peat, young brown coals, old brown coals, hard coals, anthracites. For hard coals: long fibres, gas, fat steam, coking, lean coals. For the petrographic ingredients of hard coals: tarry inclusions, vitrinite and clarinite, durain, fusain. For the products from the thermal treatment of solid fuels: primary tars, coke tars and primary tars from sapropel fuels, sapropel-humic, humic-sapropel and humic products.

LOZOVY, A.V.

USSR/Chemical Technology - Chemical Products and Their
Application. Treatment of solid mineral fuels

I-12

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12869

Author : Kazanskiy B.A., Gonikberg M.G., Lozovoy A.V., Gavrilova
A.Ye., Blonskaya A.I.

Inst : Institute of Mineral Fuels of the Academy of Sciences
USSR

Title : Investigation of Hydrogenation of Coal at Hydrogen
Pressure Above 1000 Atm.

Orig Pub : Tr. In-ta goryuchikh iskopayemykh AN SSSR, 1955, 6, 3-15

Abstract : Investigation, under laboratory conditions, of the hy-
drogenation of coal at 420° and pressure of 300-1700
atmospheres, with and without an Fe catalyst. It is
shown that under the given conditions, the Fe catalyst
has no effect on the hydrogenation process. Increase
in pressure from 300-400 to 1200-1500 atmospheres dou-
bles the total yield of gasoline and middle oil fraction,

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LOZOVY, B V

The relative activity of heterogeneous catalysts for vapor-phase hydrogenation. A. V. Lozovoy, A. B. V. Lobachev, and S. A. Seleznev. *Trudy Inst. Khim. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 6, 16-24 (1955). Three fresh samples of the principal vapor-phase catalysts, WS_2 , $WS_2 + NiS + Al_2O_3$ (I), and $WS_2 + aluminosilicates$ (II) were tested for the hydrogenation of olefins and phenol in a continuous tub. installation at 50-200 atm., 350°, and a space velocity of 3-29. All the catalysts hydrogenated the olefins (cyclohexene, naphthalene, and Tetralin) and reduced Tetralin to Decalin and PhOH to C₁₀H₈. The activity of the freshly prepd. catalysts can be arranged in the following descending order: I, WS_2 ; II. The difference in activity is most pronounced in the case of double bonds which are difficult to hydrogenate. The difference in activity between I and WS_2 was smaller than that for II. The 3 catalysts were practically equiv. for olefin hydrogenation. The electron-microscopic investigation at a magnification of 14,000 showed that WS_2 consisted of single crystals and their agglomerations have a size of 300-10,000 Å, with a deformation of the crystallites which retain the correct hexagonal form. It formed a cloudlike mass of $γ-Al_2O_3$ with such fine crystals (50 Å) that they appeared amorphous. The WS_2 crystals appeared imbedded in that mass and NiS could not be seen. The higher activity of the complex catalyst is explained by the complete accessibility of the minute WS_2 crystals to the reacting substances, which readily penetrate the porous Al_2O_3 layer. The overall hydrogenation activity of all the catalysts was unaffected by increasing the pressure from 50 to 110 atm. at 350°, and the freshly made catalysts differ quantitatively but not qualitatively in their hydrogenation activity. W. M. Sternberg

AID P - 2262

Subject : USSR/Chemistry .

Card 1/1 Pub. 152 - 7/19

Authors : Lozovoy, A. V, S. A. Senyavin and A. B. Vol'-Epshteyn

Title : Activity of certain hydrogenation catalysts

Periodical: Zhur. prikl. khim., 28, no.2, 175-184, 1955

Abstract : Experiments with unsaturated hydrocarbons, (naphthalene, benzene, and tetralin) in the presence of 18 hydrogenation catalysts at temperatures of 420-450°C and pressures of 180-220 atm. are described. The catalysts consisted of oxides and sulfides of metals of the groups 4,5,6, and 8 of the periodic system. Four tables, 2 diagrams, 12 references (6 Russian: 1937-51).

Institution: Institute of Mineral Fuels of the Academy of Sciences of the USSR

Submitted : Je 18, 1953

Lozovoy, A. V.

p. 180 g. 180 g. 180 g.

PHASE I BOOK EXPLOITATION

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Vsesoyuznoye soveshchaniye po probleme iskusstvennogo zhidkogo topliva i tekhnologicheskikh gazov. 2d., Moscow, 1954.

Khimicheskaya pererabotka topliva; trudy soveshchaniya (Chemical Treatment of Fuel; Transactions of the Second All-Union Conference on Synthetic Liquid Fuel and Industrial Gases) Moscow, Izd-vo AN SSSR, 1957. 430 p. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut goryuchikh iskopayemykh.

Eds.: Lanin, V. A., Doctor of Chemical Sciences (semi-coking); Lozovoy, A. V., Doctor of Chemical Sciences (hydrogenation); Shishakov, N. V., Doctor of Technical Sciences (gasification); Ed. of Publishing House: Bankvitser, A. L.; Tech. Ed.: Kiseleva, A. A.; Corrector: Bobrov, V. A.

PURPOSE: This book is intended to promote technical progress and to assist in the exchange of experience among scientists working on the production of synthetic liquid fuels and gases.

COVERAGE: This monograph contains selected reports delivered at the Second All-Union Conference on Synthetic Liquid Fuel and Gases which was held in Moscow from November 25, 1954 to December 2, 1954. The reports deal with such subjects as

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Chemical Treatment of Fuel (Cont.)

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the theory and technology of semi-coking of solid fuels, gasification, hydrogenation, and thermal diffusion. The reports also discuss the use of gases as raw material for the production of synthetic liquid fuel and chemical products. This monograph is extensively illustrated with diagrams and tables. For references see Table of Contents. The following institutions are mentioned in this monograph: IGI AN SSSR (Institut goryuchikh iskopayemykh imeni G. M. Krzhizhanovskogo AN SSSR—Institute of Mineral Fuels imeni G. M. Krzhizhanovskiy of the Academy of Sciences, USSR), VNIGI (Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo zhidkogo topliva i gaza — All-Union Scientific Research Institute of Synthetic Liquid Fuels and Gases), Irkutskiy gosudarstvennyy universitet imeni A. A. Zhdanova (Irkutsk State University imeni A. A. Zhdanov), Ural'skiy politekhnicheskii institut imeni S. M. Kirova (Ural Polytechnic Institute imeni S. M. Kirov), Institut teploenergetiki AN UkrSSR (Institute of Thermal Power Engineering, Academy of Sciences, UkrSSR), Laboratoriya khimicheskoy pererabotki topliv Instituta teploenergetiki AN UkrSSR (Ukrainian Academy of Sciences Laboratory for the Chemical Treatment of Fuels), Slantsekhimicheskii kombinat "Kiviyli" ("Kiviyli" Shale-Chemical Combine), VNIIPS (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev—The All-Union Scientific Research Institute for Shale Processing), Institut nefti AN SSSR (Petroleum Institute, Academy of Sciences, USSR), Institut energetiki i khimii Vostochno-Sibirskogo filiala AN SSSR

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Chemical Treatment of Fuel: (Cont.)

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(Power and Chemistry Institute, East Siberian Branch of the Academy of Sciences, USSR), TsIATIM (Tsentral'nyy nauchno-issledovatel'skiy institut aviatsionnykh topliv i masel — Central Scientific Research Institute of Aviation Fuels and Lubricants), GIAP (Gosudarstvennyy institut azotnoy promyshlennosti—State Institute of the Nitrogen Industry), Saratovskiy gosudarstvennyy institut imeni, N. G. Chernyshevskogo (Saratov State University imeni, N. G. Chernyshevskiy), Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza (All-Union Scientific Research Institute of Natural Gas), Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva (All-Union Scientific Research Institute of Petroleum and Gas Refining and Synthetic Liquid Fuel Production), VTI (Vsesoyuznyy teplotekhnicheskiy institut im. F. Dzerzhinskogo — All-Union Heat Engineering Institute im. F. Dzerzhinskoy), and MEI (Moskovskiy energeticheskiy institut im. Molotov—Moscow Institute of Energetics im. Molotov).

TABLE OF
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Foreword

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Kazakov, Ye. I. (IGI AN SSSR and VNIGI), and Bezradetskiy, G. N. (IGI AN SSSR and VNIGI). Semi-coking of Solid Fuels and the Tasks of Scientific Research in this Card 3/20

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Field

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There are 14 references of which 9 are Soviet and 5 are English. Reference is made to the following institutions which assisted in the study of raw material for semi-coking: Irkutskiy gosudarstvennyy universitet (Irkutsk State University), Ural'skiy politekhnicheskiy institut (Ural Politechnic Institute), Institut organicheskoy Khimii Akademii nauk SSSR (Institute of Organic Chemistry, Academy of Sciences, USSR).

Lanin, V.A. (IGI AN SSSR) (Deceased). Role and Significance of Scientific Research in the Effective Use of Low Temperature Tars

18

There are no references and no facilities are listed. The one personality referred to is S. R. Sergiyenko.

Larina, V. A. (Irkutskiy gosudarstvennyy universitet). Raw Material Base for Semi-coking in Eastern Siberia

23

There are 3 Soviet references. Twelve tables are included. The following personalities are mentioned: A. V. Kalabina, A. Ye. Favorskiy, and M. F. Shostakovskiy.

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Levin, I. S. (Ural'skiy politekhnicheskiy institut) Lignites of the Urals and Siberia as a Raw Material Base for the Synthetic Liquid Fuel Industry.

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The following personalities are referred to: L. P. Ukhov, Docent, and his assistants A. A. Bashkirtseva and B. S. Gurevich; B. I. Timin, Docent, and his assistants Ye. S. Ekel' and Z. D. Kablova. Extensive work in thermal dissolution of fuel was done by M. K. D'yakova and A. V. Lozov. One table and one diagram are included. There are no references.

Shchegolev, G. M. (Institut teploenergetiki AN UkrSSR). Semi-coking of Ukrainian Lignite by Means of a Solid Heat Carrier

45

No personalities are referred to and there are no references. The only facility mentioned is the Energeticheskiy institut imeni, G. M. Krzhizhanovskogo AN SSSR (Power Institute imeni G. M. Krzhizhanovskiy, Academy of Sciences, SSSR). Eight diagrams are included.

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Chemical Treatment of Fuel: (Cont.)

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Bezradetskiy, G. N. (VNIGI) and Turskiy, Yu. I. (VNIGI),
Semi-coking of Coal Mines in a "Boiling" Zone

There are no references. Five tables are included.

56

Perepelitsa, A. L. (Vostochno-Sibirskiy filial AN SSSR)
Semi-coking of Powdered Cheremkhovo Coals

65

There are 3 references of which one is Soviet and 2 are English.

The personalities referred to are: Ye. I. Kazakov who demonstrated the advantage of using a gaseous heat-carrier instead of a solid carrier; B. K. Klimov, Corresponding Member, Academy of Sciences, USSR, active in the establishment (1945) of the first power-chemical plant using gaseous and solid heat carriers at the Gusinozersk Power Plant of the East Siberian Railroad; I. Ye. Kubylin and L. I. Girshman, Members of Komissiya Prezidiuma AN SSSR (Commission of the Presidium, Academy of Sciences, USSR). The facilities mentioned are: Elektrostantsiya zavoda Libknekhte (the power plant of the K. Libknekht Plant at Dnepropetrovsk), DPRZ (Dnepropetrovskiy parovozoremontnyy zavod—Dnepropetrovsk Locomotive Repair Plant), Gusinozerskaya elektrostantsiya (Gusinozersk Power Plant), Sodovyy zavod Buryat-Mongol'skoy ASSR (Soda Plant in the Buryat-Mongol'skaya ASSR), IZTM (Irkutskiy zavod tyazhelogo mashinostroyeniya—Irkutsk Heavy Machine-building Plant), Irkutskiy gorno-metallurgicheskiy institut (Irkutsk Mining and Metal-

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lurgical Institute), Zavod imeni Kuybysheva (Plant imeni Kuybyshev), and Institut energetiki i khimii Vostochno Sibirskogo filiala AN SSSR (Power and Chemistry Institute of the East Siberian Branch of the Academy of Sciences, USSR). Seven diagrams are included.

Al'tshuler, V. S. (IGI AN SSSR) and Shafir, G. S. (IGI AN SSSR).
Characteristics of Semi-coking of Solid Fuel Under Pressure

76

There are no references. Personalities mentioned are N. A. Orlova and N. D. Likhacheva of the Khar'kov Coal and Chemical Institute; A. D. Kokurina, O. A. Krylova, F. Fisher and his assistants who studied the effect of pressure on the thermal dissolution of fuels; B. K. Klimov, Ye. I. Kazakov, P. K. Kogerman, V. A. Lanin, G. Ye. Fridman, and V. P. Tsibasov who studied the effect of gas on semi-coking processes. Eight tables and two diagrams are included.

Kazakov, Ye. I. (IGI AN SSSR) and Malashenko, I. P. (IGI AN SSSR).
Dynamics of Separating Volatile Products in Semi-coking Fine-grained Shales in the Gas Flow

87

Card 7/20 There are 4 Soviet references. No personalities or facilities are mentioned. Six tables and 7 diagrams are included.

Chemical Treatment of Fuel (Cont.)

228

Kazakov, Ye. I. (IGI AN SSSR); Tyazhelova, A. A. (IGI AN SSSR); and Malashenko, L. P. (IGI AN SSSR).

The Effect of Thermal Treatment of Ukrainian Lignites on the Yield and Composition of Products of Semi-coking.

98

There are 6 Soviet references. Six tables are included. No personalities or facilities are mentioned.

Kuznetsov, V. I. (Institut teploenergetiki AN UkrSSR).

Synthetic Liquid Fuel Obtained from Ukrainian SSR Lignite Primary Tar

105

There are no references. The personalities mentioned are: R. P. Govorova, A. G. Fadeicheva, A. A. Bobrova, M. K. Chernykh, T. B. Kigel', and P. I. Vorob'yev (chief mechanic). The above are all staff members of Laboratoriya khimicheskoy pererabotki topliv Instituta teploenergetiki AN UkrSSR (Laboratory of Chemical Purification of Fuels, Heat Thermal Power Engineering Institute, Ukrainian Academy of Sciences). No facilities are indicated. Five tables and three diagrams are included.
Card 8/20

Chemical Treatment of Fuel (Cont.)

228

Nikolayev, G. A. (Slantsekhimicheskiy kombinat "Kiviyl"). Operating Shale-distilling Tunnel Furnaces of the "Kiviyl" Shale-chemical Combine

118

There are no references. The personalities mentioned are: M. S. Kulzhinskiy, engineer, and P. M. Sheloumov, chief designer. They are credited with producing the original design of tunnel type furnaces and introducing them in the shale industry. Facilities referred to include: Kokhtla-Yarve Slantsepererabatyvayushchiy zavod (Kokhtla-Yarve Shale Processing Plant), Kashpirskiy slantsepereregonyy zavod Kashpirsk Shale Distilling Plant), Slantsevyye predpriyatiya im. V. Kingiseppa (Shale Plant im. V. Kingisepp at Sallamyae in the Estonskaya SSR), Proyektnyy i nauchno-issledovatel'skiy institut mestnoy i slantsekhimicheskoy promyshlennosti (Planning and Scientific Research Institute of the Local and Shale-chemical Industry), Tallinskiy politekhnicheskiy institut (Tallin Polytechnic Institute), and Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building).

Feofilov, Ye. Ye. (VNIIPS). Production of Synthetic Liquid Fuel and of Chemical Products from Shale Tar

128

There are no references. The personalities mentioned include: V. F. Polozov

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Chemical Treatment of Fuel (Cont.)

228

and M. V. Kobyl'skaya (both of the staff of VNIIPS); N. I. Zelenin and S. S. Semenov, who worked with the author in testing the components of shale tar; V. A. Lanin and his assistants of the IGI AN SSSR who studied the catalytic cracking of phenol-free shale tar fractions. Others were: A. P. Sivertsev; O. S. Kuratova; L. I. Gulyayeva; B. I. Ivanov; N. F. Sharonova; M. V. Pronina; G. N. Garmovskaya; and Kh. D. Raudsepp. The research workers, A. Ya. Drinberg and others of LKhTI (Leningradskiy khimiko-tekhnologicheskii institut—Leningrad Institute of Chemical Technology) collaborated with staff members of the scientific research organizations of Estonskaya SSR. Other organizations mentioned were: Leningradskiy veterinarnyy institut (Leningrad Veterinary Institute); VIZR (Vsesoyuznyy nauchno-issledovatel'skiy institut zashchity rasteniy—All-Union Scientific Research Institute for the Protection of Plants); and TsLATIM (Tsentral'nyy nauchno-issledovatel'skiy institut aviamotorostroyeniya im. P. I. Baranova—Central Scientific Research Institute of Aircraft Engines im. P. I. Baranov).

Lanin, V. A. (IGI AN SSSR) (Deceased); Fridman, G. Ye. (IGI AN SSSR) and Peresleni, I. M. (IGI AN SSSR). Production of Motor Fuels from Generator Shale Tar

136

There are no references, personalities or facilities. Thirteen tables are included.

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Chemical Treatment of Fuel (Cont.)

228

Makarov, I. A., Data Gained from Starting a Hydrogenation Plant

146

There are no references, personalities or facilities. Two tables and four drawings are included.

Katsobashvili, Ya. R. (Institut nefti AN SSSR). Destructive Hydrogenation of heavy Petroleum Residues in Dispersed State Under Low Pressure in a Circulating Catalyst Flow. There are 16 Soviet references.

159

The personalities mentioned are: V. I. Karzhev, Doctor of Sciences; N. S. Kurkova, A. R. Brum-Tsekhovay, N. P. Volynskiy, and N. V. Sidorova. All of them are on the staff of the Petroleum Institute, Academy of Sciences, USSR. Ten tables and two drawings are included.

Lozovoy, A. V. (IGI AN SSSR) and Senyavin, S. A. (IGI AN SSSR).

Relative Velocity in Hydrogenation and Decomposition of Hydrocarbons Under Conditions of Destructive Hydrogenation in the Presence of Sulfide Catalysts

180

There are 5 references of which 4 are Soviet and one is German. The personalities mentioned include: M. S. Nemtsov, Ye. I. Prokopets, V. N. Khadzhinov, and I. I. Yeru. Eight tables are included.

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Chemical Treatment of Fuel (Cont.)

228

Bogdanov, I. F. (IGI AN SSSR). Classification of Catalysts for Hydrogenation 195

There are 17 references, of which 14 are Soviet, one English, one German and one translated from German. No personalities or facilities are mentioned.

Kalechits, I. V.; Strakova, K. A.; and Katkova, L. M. (All of the Institut energetiki i khimii Vostochno-Sibirskogo filiala AN SSSR). Conversion of Benzene under Conditions of Destructive Hydrogenation 206

There are 15 references, of which 13 are Soviet, one English, and one German. The personalities mentioned are: N. A. Orlov, B. L. Moldavskiy, M. S. Nemtsov, I. B. Rapoport, A. V. Lozovoy, Ye. I. Prokopets, S. A. Senyavin, and A. Filar-etov. Eight tables are included.

Kalechits, I. V., Popova, N. I., and Salimgireyeva, F. G. (All of them from Institut energetiki i khimii Vostochno-Sibirskogo filiala AN SSSR). The Composition of Raw Materials, of Semi-Products and of Destructive Hydrogenation Products of Cheremkhovo Primary Tar 216

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Chemical Treatment of Fuel (Cont.)

228

There 18 Soviet references. The following personalities are mentioned: A. V. Lozovoy, Ye. I. Prokopets, M. S. Nemtsov, G. S. Landsberg, B. A. Kazanskiy, N. D. Zelinskiy, I. A. Masayen and G. D. Gal'pern. The facilities mentioned are VNIGI and IGI AN SSSR. Ten tables are included.

Lanin, V. A. (IGI AN SSSR); Pronina, M. V. (IGI AN SSSR); and Knyazeva, M. S. (IGI AN SSSR). Chemical Composition of Fractions of Liquid-phase Hydrogenated Cherekhovo Lignite Tar

231

There are 7 references of which 3 are Soviet, one German, one English, one French, and one Dutch. The only personality mentioned is Ye. I. Tomina of VNIIPS (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev--All-Union Scientific Research Institute for Shale Processing). Twelve tables are included.

Gol'dshteyn, D. L. (TsIATIM); Agafonov, A. V. (TsIATIM); Rysakov, P. P. (TsIATIM); and Teregulov, D. Kh. (TsIATIM). Hydrofining of Sulfurous Petroleum Products to Obtain Commercial Motor Fuels.

245

Card 13/20

Chemical Treatment of Fuel (Cont.)

228

The following personalities are mentioned: B. L. Moldavskiy, V. N. Pokorskiy, K. P. Lavrovskiy, P. V. Puchkov and A. V. Agafonov. Nine tables and 7 drawings are included.

D'yakova, M. K. (IGI AN SSSR). The Manufacture of Synthetic Liquid Fuel and Chemical Products by Means of Thermal Solution of Solid Fuels

261

There are 7 Soviet References. No personalities or facilities are mentioned. Seven tables and 2 drawings are included.

D'yakova, M. K. (IGI AN SSSR); Vol'-Epshteyn, A. B. (IGI AN SSSR); and Sovetova, L. S. (IGI AN SSSR). Development of an Effective Method for Processing Coal and Shale Slurry Obtained During Hydrogenation and Thermal Dissolution.

276

There are 9 references of which 3 are Soviet, 4 English, one Japanese, and one German. No personalities or facilities are mentioned. Eight tables are included.

Card 14/20

Chemical Treatment of Fuel (Cont.)

228

Shishakov, N. V. (IGI AN SSSR). Problems of Industrial Gas Production

291

There are no references and no personalities. The following facilities are mentioned: VNIGI (Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo zhidkogo topliva i gaza—All-Union Scientific Research Institute of Synthetic Liquid Fuel and Gas), VTI (Vsesoyuznyy teplotekhnicheskiiy institut imeni F. Dzerzhinskogo—All-Union Heat Engineering Institute im. F. Dzerzhinskiy), GIAP (Gosudarstvennyy institut azotnoy promyshlennosti—State Institute of the Nitrogen Industry), MEI (Moskovskiy energeticheskiiy institut imeni Molotov—Moscow Institute of Power Engineering im. Molotov), MKhTI im. D. I. Mendeleev (Moskovskiy khimiko-tekhnologicheskiiy institut imeni D. I. Mendeleeva—Moscow Institute of Chemical Technology imeni D. I. Mendeleev), IGI (Institut goryuchikh iskopayemykh—Institute of Mineral Fuels), and VNIIPS (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev—All-Union Scientific Research Institute for Shale Processing). Two tables are included.

Novikov, L. Z. Industrial Gasification of Central Asiatic Lignites in the "Boiling" Zone of a Gas Generator for Manufacturing Synthetic Ammonia

309

There are no references. The only personality mentioned is N. V. Karkhov (GIAP). The facilities listed are the Stalinogorskiy khimkombinat

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Chemical Treatment of Fuel (Cont.)

228

(Stalinogorsk Chemical Combine), GIAP (Gosudarstvennyy institut azotnoy promyshlennosti—State Institute of Nitrogen Industry), and Vsesoyuznyy nauch-issledovatel'skiy institut iskusstvennogo zhidkogo topliva i gaza (All-Union Scientific Research Institute of Synthetic Liquid Fuel and Gas). One table and five drawings are included.

Lebedev, V. V. (IGI AN SSSR). Continuous Metal-Vapor Process for Manufacturing Hydrogen

320

One table and 13 drawings are included, and there is one Soviet reference. No personalities or facilities are mentioned.

Kashirskiy, V. G. (Saratovskiy gosudarstvennyy universitet im. N. G. Chernyshevskiy). Investigation of the Thermal Decomposition of "Obshchiy Syrt" Pulverized Shale in Vapor Flow

333

There are seven references, of which 5 are Soviet and 2 are English. Personalities mentioned include V. S. Petelina, N. B. Lobacheva, and V. D. Tsarev, who participated in the experimental part of the research, and V. S. Vasil'yev, Z. F. Chukhanov, M. D. Zalesskiy, and I. P. Nikhamov. Two tables are included.

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Chemical Treatment of Fuel (Cont.)

228

Anisonyan, A. A.; Volod'ko, N. P.; and Boldyreva, L. A. (All of them are from the Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza). Extraction of a Gas Mixture Rich in Carbon Monoxide from Residual Synthesis Gas 341.

There are no references and no personalities. Three tables and 4 drawings are included.

Anisonyan, A. A.; Volod'ko, N. P.; and Boldyreva, L. A. (All of them are from the Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza). Investigation of the Process of Incomplete Combustion of Methane in Oxygen Under Pressure for Manufacturing Synthesis Gas 348

There are no references, and no personalities or facilities are mentioned. Ten drawings are included.

Tesner, P. A. (Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza). Thermodynamic Calculation of Continued Processes for Manufacturing Synthesis Gas 358

Card 17/20

Chemical Treatment of Fuel (Cont.)

228

There are 9 references of which 5 are Soviet, 3 English, and one German. Two drawings are included. No personalities are mentioned.

Leybush, A. G. (GIAP). Catalytic Conversion of Methane with Water Vapor, Oxygen, and Carbon Dioxide 372

There are no references. The personalities mentioned, all co-workers at GIAP, are: B. P. Kornilov, M. A. Shpolyanskiy, O. V. Uvarov, M. A. Lyudkovskaya, Ye. D. Shorina, and I. V. Shulyatikov. Three tables and five drawings are included.

Poluboyarinov, G. N. (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefi i gaza i polucheniyu iskusstvannogo zhidkogo topliva). The Gasification of Donets Anthracites for Manufacturing Water Gas 383

There are 4 Soviet references. The facilities mentioned are GIAP, VNIGI, and Stalinogorskiy khimkombinat (the Stalinogorsk Chemical Combine). One table and four drawings are included.

Card 18/20

Chemical Treatment of Fuel (Cont.)

228

Pis'men, M. K. (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniya iskusstvennogo zhidkogo topliva). Gasification of Lignites in the "Beiling" Zone.

394

There are no references. The facilities mentioned are IGI, VTI, and MEI. Three tables are included.

Yermakov, V. G. (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniya iskusstvennogo zhidkogo topliva). The Manufacture of Industrial Gases by Gasification of Lean Fuel and the Removal of Slag in a Liquid State

400

Two tables are included. There are no references.

Card 19/20

Chemical Treatment of Fuel (Cont.)

228

Bashkirov, A. N. (Institut nefi AN SSSR). Some Methods of Developing Syntheses from Carbon Oxides and Hydrogen, and Methods of Manufacturing Synthetic Hydrocarbons

408

There are 31 Soviet references. The personalities mentioned include the following co-workers of the author: V. V. Kamzolkin, Yu. B. Kryukov, Yu. B. Kagan, V. S. Smirnov, S. M. Loktev, Ya. B. Chertkov, L. I. Zvezdkina, M. I. Khotimskaya, and B. N. Dolgov. Institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova (Institute of Fine Chemical Technology imeni M. V. Lomonosov) is mentioned.

Bashkirov, A. N.; Loktev, S. M.; and Novak, F. I. (All of them are from the Institut nefi AN SSSR). Synthesis of Hydrocarbons From Carbon Monoxide and Hydrogen on Silica Catalysts

418

There are 22 references of which 17 are Soviet, 4 German, and one English. Five tables are included. No personalities are mentioned.

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Aug. 28, 1958

Card 20/20

80317

SOV/81-59-7-24813

5.1190
5.3200

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 464 (USSR)

AUTHORS: Lozovoy, A.V., Senyavin, S.A.

TITLE: On the Relative Rates of Hydrogenation¹ and Decomposition of Hydrocarbons Under the Conditions of Destructive Hydrogenation in the Presence of Sulfide Catalysts

PERIODICAL: V sb.: Khim. pererabotka topliva. Moscow, AS USSR, 1957, pp 180 - 194

ABSTRACT: Investigations of the relative rates of the hydrogenation of hydrocarbons with various types of double bonds (benzene ring (BR), condensed aromatic ring and isolated ethylene bond in naphthylenes) were carried out in an autoclave at 380 - 475°C, a pressure of 150 - 220 atm, in the presence of Mo and W sulfides. It was established that an increase in the methyl radicals in BR to five and the lengthening of the side chain to C₂ practically does not change the hydrogenation rate of BR in the presence of MoS₂. The appearance of a condensed naphthene cycle at BR (the formation of tetralin) increases

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On the Relative Rates of Hydrogenation and Decomposition of Hydrocarbons Under the Conditions of Destructive Hydrogenation in the Presence of Sulfide Catalysts

the hydrogenation rate of BR nearly three times. The methyl substituents at the double bond exert an inhibiting influence in the hydrogenation of naphthylenes. A difference in the hydrogenation rate of hydrocarbons with various types of double bonds was noted: 1-methylcyclohexene-3 is hydrogenated 180 times and naphthalene 14 times more quickly than benzene (I). In the case of hydrogenation over WS_2 an increase in the number of methyl radicals in a one-ring aromatic nucleus to five leads to an increase in the hydrogenation rate of 1.3 times per each CH_3 -group; the introduction of a sixth CH_3 -group sharply decreases the hydrogenation rate. As to its effect on the transition from I to tetralin, WS_2 is equal to MoS_2 . The addition of hydrogen to two- and three-ring aromatic hydrocarbons takes place tens of times more rapidly than to one-ring hydrocarbons; the transition to 4 rings (chrysene) sharply decreases the rate of hydrogenation. The kinetic order of the reaction of hydrogenation of I with hydrocarbon is the zero one and with hydrogen is the first (over MoS_2); over WS_2 it is 1.5 and 0.5, respectively. In an analogous

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On the Relative Rates of Hydrogenation and Decomposition of Hydrocarbons Under the Conditions of Destructive Hydrogenation in the Presence of Sulfide Catalysts

order the temperature coefficients of the hydrogenation rate of I are 1.22 and 1.30; the apparent activation energy $E_s = 19,250$ and $25,370$ cal/mole. The conclusion was drawn that MoS_2 is a more active hydrogenation catalyst, but WS_2 is more sensitive to a change in the temperature, concentration of reagents and the structure of hydrocarbons. ✓

N. Kel'tsev

Card 3/3

LOZOVY, A.V.; KRICHKO, A.A.; MIKHAYEVA, R.A.

Hydrogenation of enriched Baltic Sea region shales under low pressure. Khim.i tekhn.topl.i masel no.5:32-40 My '57. (MIRA 10:7)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Baltic Sea region--Shales) (Hydrogenation)

LOZOVY, A.V.

Safe operation of gas networks and installations. Bezop.truda v
prom. 2 no.9:20 S '58. (MIRA 11:9)

1.Glavnyy inzhener kontory Odessgaz.
(Gas distribution--Safety measures)

BLONSKAYA, A.I.; IOZOVY, A.V.; MUSELEVICH, D.L.; RAVIKOVICH, T.M.;
TITOVA, T.A.

Two-stage layout for the hydrogenation manufacture of intermediate chemical products, motor fuels, and gases from tars of Cheremkhovo coals. Trudy IGI 9:5-14 '59. (MIRA 13:1)
(Fuel) (Coal tar)

BLONSKAYA, A.I.; LOZOVY, A.V.

Lower phenols content of the liquid-phase tar hydrogenate
of Cheremkhovo coals. Trudy IGI 9:15-25 '59. (MIRA 13:1)
(Phenols (Coal tar)

KRICHKO, A.A.; LOZOVY, A.V.; PCHELINA, D.P.

New technological layout for hydrogenation processing of
semicoke coal tars under moderate pressure. Trudy IGI 9:37-49
'59. (MIRA 13:1)

(Coal tar) (Hydrogenation)

BLONSKAYA, A.I.; LOZOVY, A.V.; GAVRILOVA, A.Ye.; GONIKBERG, M.G.;
KAZANSKIY, B.A.

Investigating hydrogenation of lean coals and anthracites
with a hydrogen pressure greater than 1000 atm. Trudy IGI 9:
50-61 '59. (MIRA 13:1)
(Coal liquefaction)

KRICHKO, A.A.; KONYASHINA, R.A.; LOZOVYI, A.V.

Hydrogenation under moderate pressure of cleaned Estonian oil
shales. Trudy IOI 9:68-85 '59. (MIRA 13:1)
(Oil shales) (Hydrogenation)

ZAKHARENKO, V.A.; LOZOVY, A.V.

Comparative activity of technical catalysts of the vapor-
phase hydrogenation of fuel. Part 2. Trudy IGI 9:96-106
'59. (MIRA 13:1)
(Hydrogenation) (Catalysts)

LOZOVY, A.V.; SENYAVIN, S.A.; SOVETOVA, L.S.

Transformations of some hydrocarbons during hydrogenation in
the presence of aluminosilicate catalysts. Trudy IGI 9:122-128
'59. (MIRA 13:1)

(Hydrocarbons) (Hydrogenation)

LOZOVY, A.V.

Relative rates of the reduction of alcohols under pressure of
hydrogen. Trudy IGI 9:148-153 '59. (MIRA 13:1)
(Alcohols) (Reduction, Chemical)

KLEIC, A.A.; LOZOVY, A.V.; PCHELINA, D.P.; SOVETOVA, L.S.; SHAGINA, L.N.

Chemical products from nonpyrolyzed tar obtained by continuous coking of Kuznetsk coal. Izv.Sib.otd.AN SSSR no.12:88-95 '60. (MIRA 14:2)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Coal-tar products)

5.3400

77530
304/30-33-1-20/79

AUTHORS: Lozovoy, A. V. Tsirlina, R. N.

TITLE: Conversion of Some Hydrocarbons on Hydrogenation in the Presence of Alumina-Molybdena Catalyst

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, No 1, pp 216-222 (USSR)

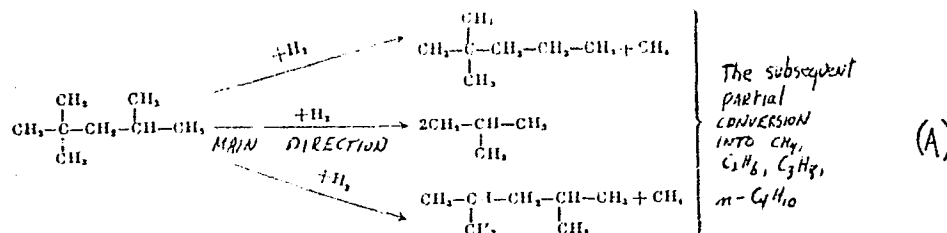
ABSTRACT: The chemistry of conversions of 2,2,4-trimethylpentane a mixture of C_{13} - C_{17} n-paraffins, ethylcyclohexane, ethylbenzene, tetralin, decalin, by destructive hydrogenation at 75-300 atm and at 510° in the presence of $MoO_3 + Al_2O_3$ was investigated for the first time. The character of destruction in all cases depends on hydrogen concentration. The conversion of 2,2,4-trimethylpentane under above conditions is given by (A). (Hydrogen = 0.9-0.7 g/ml hour.) The conversion of ethylbenzene and ethylcyclohexane is shown in (B).

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Conversion of Some Hydrocarbons on
Hydrogenation in the Presence of Alumina-
Molybdena Catalyst

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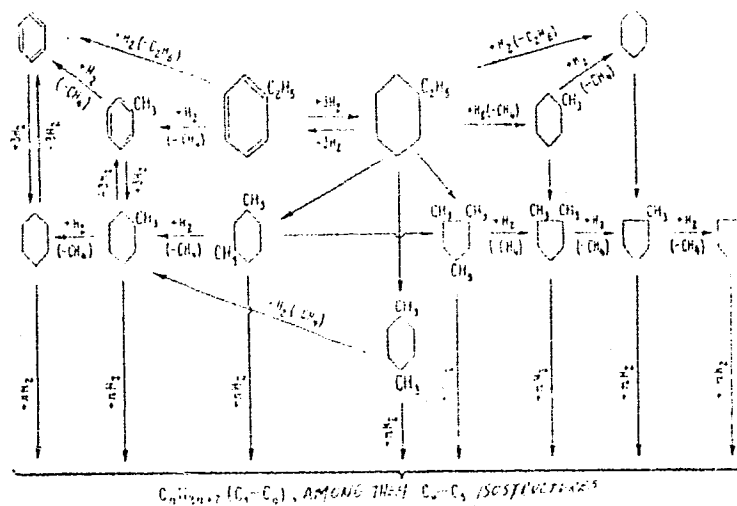


(Hydrogen = 0.9 g/ml hour.) The conversion of decalin and tetralin is shown in (C). (Hydrogen = 0.9 g/ml hour.) The degree of conversion at 300 atm is of the following order: tetralin > C₁₃-C₁₇-n-paraffins > isooctane > ethylbenzene > ethylcyclohexane > decalin; at 75 atm: C₁₃-C₁₇-n-paraffins > isooctane > tetralin > ethylcyclohexane > decalin > ethylbenzene. There are 3 tables; and 10 references, 4 Soviet, 2 US, 2 UK, 1 Japanese, 1 French. The 4 U. S. and U. K. references are: Hall, Fuel, 12, 76-93 (1933); V. N. Ipat'yev, J. Am. Chem. Soc., 55, 3696 (1933); H. Slotboom,

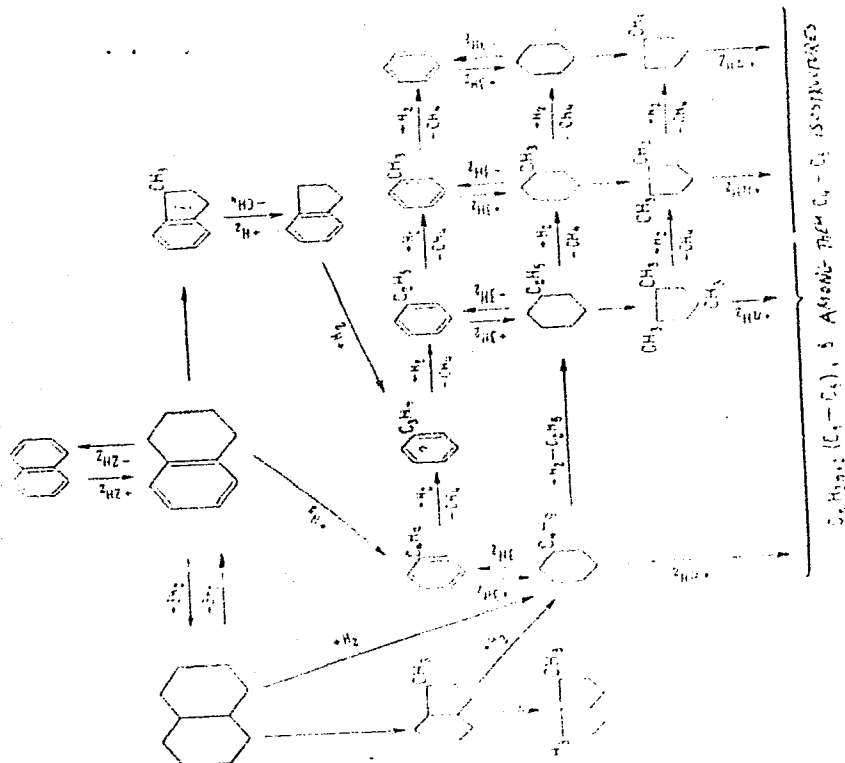
Card 2/5

Conversion of Some Hydrocarbons on
Hydrogenation in the Presence of Aromatic-
Molybdenum Catalyst

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Card 5/5



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Chem 4/5

Conversion of Some Hydrocarbons on
Hydrogenation in the Presence of Alumina-
Molybdena Catalyst

11570
SOV/NO-11-1-39/49

Petroleum, 28, 37, 8 (1932); C. Gamley, Fuel, 11, 217
(1932); 12, 39 (1933).

ASSOCIATION: Institute of Fossil Fuels, Academy of Sciences, USSR
I (Institut goryuchikh iskopaemykh AN SSSR)
SUBMITTED: December 7, 1958

Card 5/5

S/080/60/033/04/33/045

AUTHORS: Lozovoy, A.V., Senyavin, S.A., Sovetova, L.S.

TITLE: On the Transformations of Benzene, ¹Cyclohexane¹ and Isooctane¹ in the Case of Destructive Hydrogenation in the Presence of a Catalyst With Aluminosilicate Base

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 4, pp 947 - 953

TEXT: This is an investigation of the chemism of destructive hydrogenation of benzene, cyclohexane and isooctance in the presence of a W-Cr-Zn-S-F-aluminosilicate catalyst at 510°C and a pressure of 300 atm. It has been established that the transformation of benzene takes place by hydrogenation (about 37% of benzene reacted) with subsequent isomerization of cyclohexane to methylcyclopentane, the destruction of cyclohexane, methylcyclopentane and other saturated hydrocarbons with a number of carbon atoms in the molecule below six, and also in a small degree by alkylation of benzene by methyl and ethyl radicals. It was found that the destruction hydrogenation of cyclohexane (depth of transformation 48.4%) includes its isomerization into methylcyclopentane, the destruction of naphthene rings with the formation of paraffin C₁-C₆ hydrocarbons (in which case among the C₄-C₆ hydrocarbons the isoparaffin hydrocarbons prevail) and a weakly

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8/080/60/033/04/33/045

On the Transformations of Benzene, Cyclohexane and Isooctane in the Case of Destructive Hydrogenation in the Presence of a Catalyst With Alumosilicate Base

developed reaction of cyclohexane alkylation. The destructive hydrogenation of isooctane proceeds very intensively (73% transformed), the main product being isobutane (86 weight % of the isooctane transformed; 8.4% are propane and 4.4% n-butane). Under the conditions of destructive hydrogenation one of the C-C bonds of a quaternary carbon atom of isooctane is very weak. The hydrocarbons investigated are arranged in the following series according to the transformation rate: isooctane > cyclohexane > benzene. Under the conditions of high-temperature destructive hydrogenation at a pressure of 300 atm the catalyst investigated activates the reactions of destructive hydrogenation of isoparaffin hydrocarbons, the isomerization of the six-membered naphthene ring to a five-membered one and the decomposition of the naphthene rings. The reaction of hydrogenation of a benzene ring is activated moderately, the alkylation of benzene and cyclohexane weakly. The reactions of dehydrogenation, cyclization and aromatization of naphthenes and isonaphthenes are very weakly developed. There are: 3 tables and 10 references, 8 of which are Soviet and 2 English

ASSOCIATION: Institut goryuchikh iskopayemykh AN SSSR (Institute of Mineral Fuels of the AS USSR)

SUBMITTED: September 11, 1959

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S/068/61/000/010/002/002

E071/E435

AUTHORS: Borts, A.G., Krichko, A.A., Konyashina, R.A.,
Lozovoy, A.V. and L'vova, L.N.

TITLE: Processing of anthracene fraction by a hydrogenation
method

PERIODICAL: Koks i khimiya, no.10, 1961, 53-56

TEXT: An investigation of the destructive hydrogenation of anthracene fraction I (raw and crystallized out) of the Nizhne-Tagil'skiy metallurgicheskiy kombinat (Nizhne-Tagil Metallurgical Combine) was carried out in order to develop a method of its conversion into more valuable products - light aromatics and naphthalene, the demand for which is steadily increasing. The hydrogenation experiments were carried out on a continuous pilot plant with the capacity of the reactor of 0.2 and 6.0 litres. The influence of pressure (100 to 200 atm), temperature (520 to 550°C) volume velocity (0.5 to 1.0 kg/litre hr) and catalysts ($\text{MoO}_3 + \text{Al}_2\text{O}_3$ and $\text{CoO} + \text{MoO}_3 + \text{Al}_2\text{O}_3$) on the yield and composition of the products was tested. It was found that, on increasing pressure from 100 to 200 atm at 520°C, the yield of hydrogenated products decreases from 96.4 to 90.1%. The depth of conversion of
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the anthracene fraction into liquid products boiling up to 230°C and not initially present in the raw material was: at 100 atm, 15.8%; at 150 atm, 19.8%; at 200 atm, 27.2%. The yield of the fraction with a boiling temperature above 300°C (originally present in an amount of 68.1%) decreased to 42.6, 30.7 and 25.6% respectively. Under a pressure of 150 atm, anthracene is completely transformed into lower boiling products, carbazole by 87.8%, phenanthrene by 81%. A pressure of 150 atm was found to be the optimum for the process. An increase in the temperature of the process from 520 to 550°C is accompanied by some decrease in the yield of hydrogenation products and an increase in the proportion of fractions boiling to 230 and 300°C. The temperature range 520 to 550°C can be utilized in the process: beginning from 520°C for a fresh catalyst and steadily increasing during 100 to 200 hours to 550°C with decreasing activity of the catalyst (due to the deposition of coke). The formation of coke amounted to 0.14% for $\text{MoO}_3 + \text{Al}_2\text{O}_3$ catalyst and to 0.12% for $\text{CoO} + \text{MoO}_3 + \text{Al}_2\text{O}_3$ catalyst. The latter catalyst was found to be more active (a higher yield of products boiling to 230°C). The optimum volume velocity was found

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to be 0.5 kg/litre of the catalyst hour. On complete hydrogenation of the anthracene fraction I (recirculation of the fraction boiling above 250°C, about 45%) the following method of processing hydrogenation products is proposed: fraction boiling up to 250°C is distilled, the distillate boiling up to 150°C is extracted with diethyleneglycol to separate aromatic hydrocarbons. The refined products consisting mainly of 5 and 6 membered naphthenes can be transformed into C₆-C₈ aromatic hydrocarbons by platforming. The fraction boiling at 150 to 200°C (81.9% aromatic hydrocarbons) can be used as a solvent. The fraction boiling at 200 to 230°C can be used for the production of naphthalene (filtration at 0°C) and tetralene (rectification). The denaphthalenized fraction 200 to 230°C can be used as a substitute for tetralene or, on mixing with the fraction 150-200°C, as a solvent for motorcar paints. The fraction boiling at 230 to 250°C, consisting mainly of α and β -methylnaphthalenes, can be used for their production. Moreover, the fraction boiling at 210 to 250°C (without separation of naphthalene) can be oxidized to phthalic anhydride with a 70% yield. The yield of individual products are given in Table 4. There are 1 figure, 4 tables and 2 Soviet Card 3/5

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references.

ASSOCIATIONS: Gosudarstvennyy komitet Soveta Ministrov RSFSR po koordinatsii nauchno-issledovatel'skikh rabot (State Committee of the Council of Ministers of the RSFSR for Coordination of Scientific-Research Works) A.G.Borts;
IGI Pri Gosekonomsoвете SSSR (IGI at the State Economic Council of the USSR) A.A.Krichko, R.A.Konyashina, A.V.Lofovoy and L.N.L'vova.

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28791

8/106/61/000/010/003/006
A055/A127

9,3277 (also 1524)

AUTHOR: Lozovoy, I. A.

TITLE: Calculation of compression characteristics in pulse-code modulation systems

PERIODICAL: Elektrosvyaz', no. 10, 1961, 19 - 25

TEXT: The author describes a method for the calculation of the optimum compression characteristic, i.e. optimum from the point of view of the signal-to-noise ratio of quantization in pulse-code modulation systems with time-division of channels (in the case of quantization by irregular steps). Using formula (1):

$$\Delta_{x1} \approx \frac{\Delta y}{f'_x(x_1)} \quad (1)$$

where $f'_x(x_1)$ is the derivative of the compressor characteristic in point x_1 , and the general formula

$$\bar{\delta}^2 = \sum_{i=1}^N \frac{\Delta_i^2}{12} p(x_i) \quad (2)$$

where $\bar{\delta}^2$ is the average noise power of quantization, Δ_i is the magnitude of the

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i-th quantization-step, x_i is the abscissa of the center of this step, $p(x_i)$ is the probability of instantaneous signal-values within the limits $(x_i - \frac{\Delta_i}{2})$ to $(x_i + \frac{\Delta_i}{2})$ and N is the number of quantization steps, the author obtains:

$$\bar{\sigma}^2 = \frac{\Delta_y^2}{12} \sum_{i=1}^N \frac{p(x_i)}{[f'_x(x_i)]^2}. \quad (4)$$

For a great number of steps, the following approximation of (4) is sufficient:

$$\bar{\sigma}^2 \approx \frac{\Delta_y^2}{12} \int_{-\infty}^{\infty} \frac{P(x)}{[f'_x(x)]^2} dx \quad (5)$$

where $P(x)$ is the probability-density function of the instantaneous signal values. For the compressor characteristic, the equality:

$$f(0) = 0 \quad (6)$$

must be satisfied, i.e. in the absence of the signal at the compressor input, there can be no voltage at its output. Only signals with a symmetrical distribution of instantaneous values $P(x)$ will be considered here. Therefore:

$$f(x) = -f(-x) \quad (7)$$

and (5) can take the following form:

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$$\bar{\delta}^2 = \frac{\Delta^2}{6} \int_0^\infty \frac{P(x)}{[f'(x)]^2} dx. \quad (8)$$

On the other hand, $\Delta y = \frac{2Y}{N-1}$. It is adequate to state: $Y = X$, i.e.

$$f(X) = Y = X. \quad (9)$$

With equation (8), and for a signal with a known distribution of instantaneous values, it is possible to choose (using the calculus of variations) the compressor characteristic so that the minimum value of $\bar{\delta}^2$ should be ensured. For systems with pulse-code modulation and with frequency-division of channels, the optimum compression-characteristic was found by V. M. Shteyn [Ref. 1: O peredache gruppovogo signala s chastotnym deleniyem kanalov metodom kodovo-impul'snoy modulyatsii (On the transmission of group signals with frequency division of channels by pulse-code modulation), "Elektrosvyaz", 1959, no. 2]. The author investigates pulse-code modulation with time-division of channels and assumes that all individual signals have the same kind of distribution and differ only by the magnitude of the average power. If \bar{x}^2 is the signal average power, we have, according to (8):

$$\bar{\delta}^2(\bar{x})^2 = \lambda \int_0^\infty P(x, \bar{x}^2) \varphi(x) dx \quad (10)$$

where $\lambda = \Delta^2/6$; $P(x, \bar{x}^2)$ is the probability density function of the instantaneous

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signal values in the case of a subscriber with average power \bar{x}^2 , and

$$\varphi(x) = \frac{1}{[f'(x)]^2}. \quad (11)$$

Using equation (10), the author calculates the compression characteristic $f(x)$ for a given dependence of the signal-to-noise ratio of quantization on the signal power. $\varphi(x)$ that satisfies equation (10) has to be found. Under the general form:

$$\varphi(x) = \sum a_n g_n(x) w(x) \quad (12)$$

where $g_n(x)$ forms the whole system over the interval $(0, \infty)$; $w(x)$ is a weighting function, and a_n is an unknown coefficient. According to (8), the compression characteristic is:

$$f(x) = \int \varphi(x) dx + C. \quad (15)$$

The integration constant being determined from condition (6), equation (15) can

be written as follows: $f(x) = \int_0^x \varphi(x) dx. \quad (16)$

The author states that condition (9) limits the choice of the initial function $\delta^2(\bar{x}^2)$ to which corresponds the compression characteristic $f(x)$ that satisfies this condition. He analyzes, in this connection, several properties of this function. Then the author determines the compression characteristic for a particular

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case. He assumes that coding is applied to telephone signals with an exponential distribution of the probability density of instantaneous values:

$$P(x) = \frac{1}{\sqrt{2} \sqrt{x^2}} e^{-\frac{\sqrt{2}}{\sqrt{x^2}} x}, [x \geq 0]$$

$$P(x) = -P(-x),$$

where $\sqrt{x^2}$ is the RMS value of the signal. The dependence of the signal-to-noise ratio on $\sqrt{x^2}$ is supposed to be known. The function $\bar{\sigma}^2(\bar{x}^2)$ can be written as follows:

$$\bar{\sigma}^2(\bar{x}^2) = A_0 + A_1 \sqrt{x^2} + A_2 (\sqrt{x^2})^2 + A_3 (\sqrt{x^2})^3 + \dots + A_M (\sqrt{x^2})^M, \quad (18)$$

where the coefficients $A_0, A_1, A_2 \dots A_M$ are known. Substitution of $P(x)$ in (16) gives:

$$\bar{\sigma}^2(\bar{x}^2) = \frac{\Delta^2}{6} \int_0^\infty \frac{1}{\sqrt{2} \sqrt{x^2}} e^{-\frac{\sqrt{2}}{\sqrt{x^2}} x} \varphi(x) dx, \quad (19)$$

Taking into account (12), $\varphi(x)$ is assumed to have the following particular form: $\varphi(x) = \sum a_n x^n$. In this particular case, a_n can be easily determined:

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$$a_n = \frac{6(\sqrt{2})^{n+2}A_n}{\Delta^2\Gamma(n+1)} \quad (21)$$

and, according to (16), the compression characteristic is:

$$f(x) = \int_0^x \frac{dx}{\sqrt{a_0 + a_1x + a_2x^2 + a_3x^3 + \dots + a_nx^n}} \quad (22)$$

A numerical example is given at the end of the article. There are 2 figures, 3 Soviet-bloc and 1 non-Soviet-bloc references. The reference to the English-language publication reads as follows: Smith. Instantaneous companding of quantized signals. "BSTJ", 1957, no. 5.

SUBMITTED: February 28, 1961

Card 6/6

ZAKHARENKO, V.A.; LOZOVY, A.V.

Conversions of oxygen compounds (anisole, acetophenone, dimethyl phthalate) during the destructive hydrogenation in the presence of an alumina-molybdenum oxide catalyst. Zhur.prikl.khim. 34 no.3: 663-670 Mr '61. (MIRA 14:5)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Anisole) (Acetophenone) (Phthalic acid)

S/080/61/034/006/005/020
D247/D305

AUTHORS: Lozovoy, A.V., Muselevich, D.L., Ravikovich, T.M.,
Senyavin, S.A., and Cherkasova, V.F.

TITLE: Hydrogen catalysts based on an alum in an osilicate
base

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 6, 1961,
1200 - 1208

TEXT: In the present work an attempt has been made to produce a catalyst for the hydrogenation of coals and tars in the production of higher aromatic benzenes. The investigations were concerned mainly with finding a suitable natural alum in osilicate, synthesizing a catalyst of a complex character capable of converting in a single stage, in the vapor phase, unrefined, high-boiling and coal distillates containing oxygen, nitrogen and sulphur compounds into higher aromatic hydrocarbons boiling within 170-200°C, and investigating the stability of such catalysts on prolonged working

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Hydrogen catalysts based on ...

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under a pressure of 300 atm. From many natural alum in osilicates tested "askanite", H_2SO_4 - activated Askansk clay, was found to provide a base for the most active catalyst. The normal procedure of preparing the catalysts involved intimately mixing the askanite, water, CrO_3 and aq. HF , followed by the addition of tungstic acid, zinc oxide, sulphur and compounds of molybdenum, vanadium and nickel as required. After drying, the mass was crushed, sieved and formed into tablets. Activation was carried out by heating to $450^\circ C$ in a stream of hydrogen or hydrogen/hydrogen sulphide. Activity of the prepared catalyst was then determined from the yields and compositions of the hydrogenation products. The results obtained, using five of the most interesting alum in osilicate catalysts, are given in Table 1, which also includes a technical alum in o-molybdenum catalyst.

Table 1. Composition and comparative activity of aluminosilicate catalysts under autoclave conditions ($510^\circ C$, initial hydrogen pressure 130 atm, time = 20 min. Quantity of catalyst = 10 %).

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Table 1. (cont'd) Состав и сравнительная активность алюмосиликатных катализаторов в условиях автоклавных опытов (510°, начальное давление водорода 130 ат, длительность 20 минут)
Количество катализатора 10%

3	1 Для приготовления катализатора впро (вес. %)										2 Выход (вес. % от сырья)		5
	4	5	6	7	8	9	10	11	12	13	14	15	
катализатора	асконита	40%-в. плавн.-кислоты	S	W	Mo	V	Zn	Ni	Cr	гидрогениза-ция с конечной температурой 175°	газ + вода	количество ароматических углеводородов в гидрогенизате (вес. %)	
32	70.6	10.9	10.9	—	—	—	—	7.6	—	29.9	33.7	71.1	
11	88.0	10.5	6.1	—	—	—	5.4	7.3	2.7	27.5	35.1	77.5	
36	71.7	10.8	6.0	—	—	3.0	5.7	—	2.8	28.6	28.6	69.2	
26	72.0	11.0	6.1	—	2.2	—	5.8	—	2.9	33.4	31.3	77.5	
345	71.4	10.7	6.0	3.3	—	—	5.8	—	2.8	43.1	27.7	64.1	
7360*	—	—	—	—	—	—	—	—	—	36.1	36.1	61.2	

Legend: 1 - Catalyst prepared from (weight %); 2 - yield (weight % based on raw material); 3 - no. of catalyst; 4 - askonite; 5 - 40 % hydrofluoric acid; 6 - 12 - (as indicated); 13 - product of Card 3/5

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hydrogenation boiling up to 175°C; 14 - gas + losses; 15 - quantity of aromatic hydrocarbons in the product of hydrogenation (weight %); 16 - *Catalyst composition: Al_2O_3 75.05 %; MoO_3 14.77 % (Mo 9.85 %); Fe_2O_3 0.59 % (Fe 0.41 %); H_2O bound + 8.59 %; time of experiment = 15 min.

Further experiments were conducted in a continuous flow apparatus at 480-520°C and 300 atm. over a period of 6-10 hrs. Under those conditions catalyst No. 345 was found to exhibit the highest activity. Investigations of activity and stability of the catalyst No. 345 were also conducted in a continuous hydrogenation plant at a temperature of 510°C and a pressure of 300 atm; over 97 hrs. runs. For velocities equal to 1, the average yield of the product of hydrogenation was 82 %, including 50 % of the fraction boiling up to 170°C and containing 53 % of aromatic hydrocarbons. After 97 hrs. of operation the catalyst was found to lose some of its activity, which could not be restored by enrichment with sulphur. It has been

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deduced, therefore, that a hydrogen pressure of the order of 300 atm is insufficient to prevent deactivation of the catalyst used for the hydrogenation of coal tar derivatives. There are 4 tables and 19 references: 10 Soviet-bloc and 9 non-Soviet-bloc. The references to the four most recent English-language publications read as follows: M.G. Pelipetz, L.V. Frank, H.H. Ginsberg, M.L. Wolfson, E.L. Clark, Ch. Eng. Progress, 50, 626-628, 1954; M.L. Wolfson, M.G. Pelipetz, A.D. Demick, E.L. Clark, Ind. Eng. Chem. 43, 536-540, 1951; I.G. Ciapetta, J.B. Hunter, Ind. Eng. Chem. 45, 147, 155, 1953; I.G. Ciapetta, Ind. Eng. Chem. 45, 159, 162, 1953.

ASSOCIATION: Institut goryuchikh iskopayemykh AN SSSR (Institute of Mineral Fuels AS USSR)

SUBMITTED: September 19, 1960

Card 5/5

LOZOVY, A.V.; MUSELEVICH, D.L.; RAVIKOVICH, T.M.; SENYAVIN, S.A.; TITOVA, T.A.;
CHERKASOVA, V.F.; Prinimali uchastiye: DEMBOVSKAYA, Ye.A.;
ZAKHARENKO, V.A.; L'VOVA, L.N.; MARKINA, T.I.

Hydrogenation catalysts on an aluminosilicate base. Zhur.prikl.khim.
34 no.10;2295-2302 0 '61. (MIRA 14:11)
(Hydrogenation) (Catalysts)

S/064/62/000/006/001/003
B144/B138

AUTHORS: Krichko, A. A., Lozovoy, A. V., Sovetova, L. S.

TITLE: Production of naphthalene from aromatized crude by high-temperature hydrogenation

PERIODICAL: Khimicheskaya promyshlennost', no. 6, 1962, 1 - 5

TEXT: Naphthalene (N) was produced by hydrogenation of α -methyl N, decalin, n-hexadecane, 1:1 mixture of β -methyl and toluene, and some commercial mixtures containing alkyl N, in a 0.2-liter laboratory reactor. The composition of the hydrogenates was determined by rectification, chromatography on silicagel, and spectral analysis. These tests carried out with $Al_2O_3 + MoO_3$ (CI) catalyst showed that: (1) methyl N are easily demethylated to N; (2) low boiling aromatic hydrocarbons (HC) form if the initial mixture contains monocyclic aromatic HC; (3) dicyclic hexatomic naphthene HC are good compounders and yield enough N to liberate H_2 on dehydrogenation, thus reducing H_2 consumption; (4) paraffin HC should be previously removed. Thus, the N-free commercial mixtures selected for the Card 1/3

Production of naphthalene from ...

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production of N were: coal tar, tar from gaseous HC, green oil from kerosene, dewaxed gasoil produced by thermal cracking, pyridine extract from gasoil produced by catalytic cracking. Hydrogenation was performed in the presence of Cl , $\text{CoO} + \text{MoO}_3 + \text{Al}_2\text{O}_3$ (CII), and $\text{Cr}_2\text{O}_3 + \text{K}_2\text{O} + \text{Al}_2\text{O}_3$ (CIII) catalysts at 40, 70, and 100 atm; 500 and 600°C; a space velocity of 1.0 - 1.5 kg/l·hr; and a H_2 input of 1000 kg/1 kg of crude. With coal tar, maximum yields in N were obtained from the 230 - 250°C fraction with CII and CI (34.8 and 33.6 % by weight). Dewaxed gasoil yielded only 3.1 % N. Generally speaking, the yields from the 230 - 350°C fractions ranged from 20 to 60 % when H_2O vapor (20 % of the weight of the crude) was added. A high content in aromatic HC (> 75 %) is essential for a good N output. CIII proved much less effective than CII. The catalyst activity is limited by carbon deposits, but can be maintained by periodic regeneration or temperature reduction to 530 - 550°C. Non-catalytic dealkylation of aromatic HC by high-temperature hydrogenation is possible, but requires temperatures of 700°C and above to obtain the same degree of conversion. Extraction with pyridine seems to be a promising method of using raw material containing even less than 75 % aromatic HC, such as kerosene and

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Production of naphthalene from ...

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gasoil fractions of cracking distillates. There are 1 figure and 7 tables.

ASSOCIATION: Institut goryuchikh iskopayemykh AN SSSR (Institute of
Mineral Fuels AS USSR)

Card 3/3

LOZOVY, Aleksandr Vladimirovich; LUTSENKO, Vladimir Arsent'yevich;
NESTEROVICH, Nikolay Faddeyevich; TRUBIN, Mikhail Ivanovich;
ORLOV, A.I., red.; POLTORATSKAYA, E., red.; ZELENKOVA, Ye.,
tekhn. red.

[Principles of sanitary engineering] Osnovy sanitarnoi tekhniki.
[By] A.V.Lozaovoi i dr. Kiev, Gosstroizdat USSR, 1962. 150 p.
(MIRA 15:7)

(Sanitary engineering)

BORTS, A.G.; KRICHKO, A.A.; KONYASHINA, R.A.; LOZOVY, A.V.; L'VOVA, L.N.

Processing anthracene fraction by hydrogenation. Koks i khim.
no.10:53-56 0 '61. (MIRA 15:1)

1. Gosudarstvennyy komitet Soveta Ministrov RSFSR po koordinatsii
nauchno-issledovatel'skikh rabot (for Borts). 2. IGI pri
Goskonomsovet SSSR (for Krichko, Konyashina, Lozovoy, L'vova).
(Anthracene)
(Hydrogenation)

KRICHKO, A.A.; LOZOVY, A.V.; SOVETOVA, L.S.

Production of naphthalene from aromatized raw materials by means
of high temperature hydrogenation. Khim.prom. no.6:387-391 Je
'62. (MIRA 15:11)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Naphthalene) (Hydrogenation)